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# PLUMBER & STEAMFITTER

*and Sanitary Engineer of Canada*

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

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Vol. VI.

Publication Office : TORONTO, JAN. 1, 1912.

No. 1

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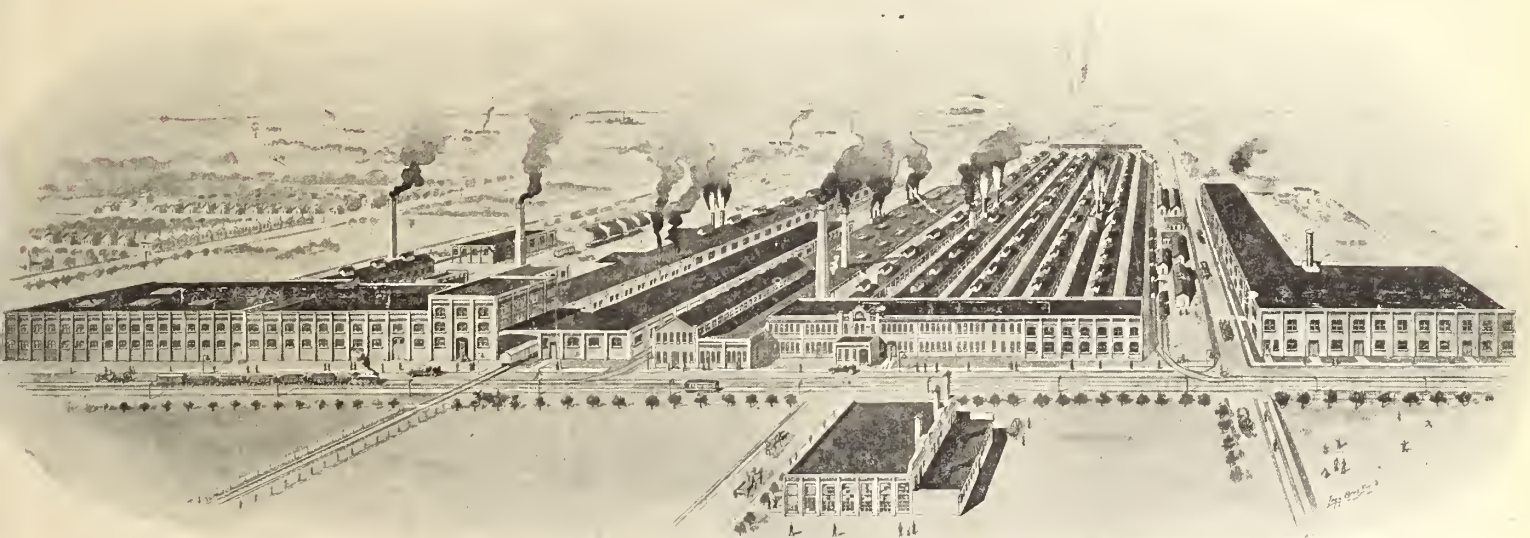
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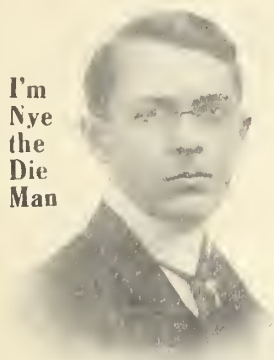
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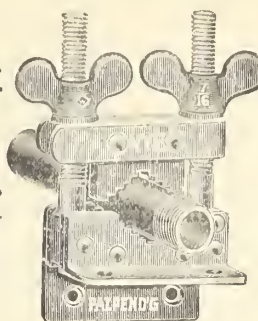
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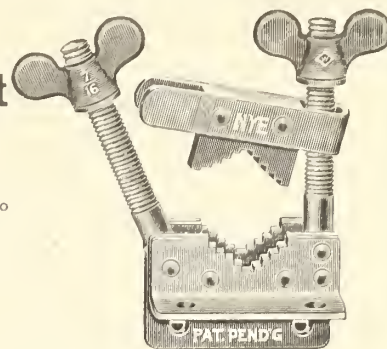
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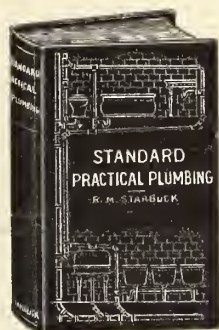
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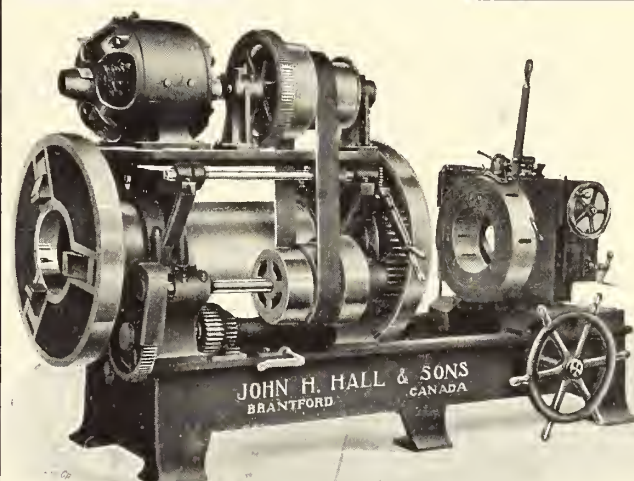
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## and Sanitary Engineer of Canada

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TORONTO, JANUARY 1, 1911

A NEW YEAR has begun. The outlook in Canada is for one of the best years in the history of the country. With prosperous conditions now existing and the momentum of the success achieved during 1911, to help along,

### THE YEAR THAT IS AHEAD.

the new year should prove one of the best on record in the industrial life of the country. On casting back over the events of the year, one reaches the conclusion that, under all circumstances, conditions were exceptionally good. An irresistible impulse toward activity has dominated trade in Canada to such an extent that prosperity has reigned unchecked, whereas in the United States uncertainty and pessimism have been the ruling sentiments.

It is now possible to gauge with a certain degree of exactitude the volume of business done during the past year. The plumbing and heating trades have been exceptionally busy as the natural result of the expansion of building operations in all parts of the country. Although no definite figures are procurable, everything points to a record amount of business having been done. That this condition will continue throughout the coming year is reasonably assured.

NEW YEAR RESOLUTIONS are now in order. Every man makes a few resolves at this time of year, regarding his conduct in the year that is ahead. In a few days, a week perhaps, he breaks them. New Year

### RESOLUTIONS WORTH WHILE.

resolutions, like laws, seem made to be broken. It is, of course, inevitable that the faults of years' standing should take some time in correcting.

A man cannot break a bad habit at once; he will backslide frequently before he gets that bad trait finally broken. The trouble is that he takes the first relapse as indicative of his inability to reform and falls back with relieved readiness into the old rut.

Members of the sanitary and heating trade might well adopt a few good resolutions this year. Here are some of them.

Join your local association.

Be a loyal member and worker.

Get to know the other men in the trade. Don't regard your competitors as thugs and robbers.

Don't cut prices. If your competitor does, let him go ahead. There is no reason why you should share the fate he is driving to.

Look after the business end. Keep books in a business-like way and make collections promptly.

Advertise. There are various forms of advertising. Good service and fair treatment are among the best.

Keep your premises neat and up-to-date.

We have named a few of the good resolutions "worth while." There are plenty of others, but a man cannot do too much at once and, if all members of the trade, adopt and live up to the ideas set down above, they will find that business conditions will improve.

THE STATEMENT is made by a prominent plumbing manufacturer in the Maritime Provinces that he is making an effort to have all members of his sales staff thoroughly acquainted with the goods they are selling.

### WELL INFORMED SALESMEN.

To affect this, he is giving his travelers trips for the sole purpose of learning something of the manufacture and use of certain articles.

The idea is not a new one, but it is one, unfortunately which is seldom carried out. It is highly desirable that traveling salesmen should be intimately acquainted with the practical points of the goods they sell; it is desirable from many standpoints. In the first place, it results in the making of wider sales and, in the second place, it helps the plumber to improve his business in turn. This is particularly true with reference to new goods. The salesman who does not know his goods is not in a position to inform the dealer on the points which the latter should understand, if he expects to sell those goods to the public. It is not fair to the dealer to expect him to market an article, the uses of which he cannot intelligently explain.

Too much stress, cannot be laid, therefore, on the advisability of sending out a traveling sales staff thoroughly equipped with the necessary knowledge to acquaint the trade with the practical value and uses of the goods carried.

NOW LET'S settle down to work again.

PLUMBER AND STEAMFITTER wishes a happy and prosperous New Year to all.

EDISON THE MODERN wizard has invented a new kind of stove, one which sends out cold air instead of warm. It is designed for use during the warm seasons. If the idea pans out—and, seeing that it is Edison's, it probably will—another valuable field will be opened up for the sanitary and heating engineer.



# Campaign Started for Uniform Regulations

Ontario Society Will Strive for Provincial Legislation to Govern Sanitary Conditions—Information Will be Gathered From all Parts of Province.

THE campaign inaugurated by members of the Ontario Society of Domestic Sanitary and Heating Engineers for provincial legislation to govern matters of sanitation, promises to become one of the most important movements of trade organization. The idea is a broad one and it will entail long and arduous work. It will, at best, take months to accomplish, possibly years. Once obtained, however, uniform provincial legislation would remedy many of the evils now found in the trade. The onerous to the sanitary engineer would be great; to the public greater still.

The object, in brief, is to secure legislation making uniform provision for sanitary regulation. One of the first necessities would be an enactment to compel the establishment of sewerage systems in all towns over a certain size. There are now a large number of fairly big towns in Ontario which have no sewage arrangements whatever. President Legrow cites a case which came to his attention some little time ago. He was visiting in a northern Ontario town of about 3,000 population and took occasion to enquire into the sanitary conditions there. He found that the town had established waterworks but has neglected the sewerage problem and the problem and the town was full, therefore, of cess-pools. There was a lot of typhoid in town; one doctor, he found, had no less than fourteen cases on his hands. The epidemic may not have been directly due to the bad conditions but undoubtedly there was some connection between the two.

## Provincial Inspection.

Another point to be urged is the necessity of providing for some form of provincial plumbing inspection. At the present time there are inspectors in the larger cities only and, as a result, a great deal of inferior work is done. The proposed new system would provide for the division of the province into districts and the appointment of inspectors for each district, to act under the direction of some central provincial board. This would mean that all work done, even in the rural sections, would be subject to inspection and a higher standard of efficiency would be the natural and immediate result.

The upshot of legislation of this nature would be the enactment of uniform regulations to govern all parts of the province. This in itself would be a great benefit. The conflict of diverse

ordinances is one of the crying evils of present day conditions.

These are two of the main points. There are numerous others. Provincial legislation could be drafted to remedy the unsatisfactory conditions now prevailing.

## Gathering Information.

The first step taken by the officers of the Ontario society will be the gathering of information. Chairman Mahoney of the Legislative Committee writes to Plumber and Steamfitter, explaining his plans as follows:

“As chairman of the Legislative Committee, I realize the very great work there is to do. We are doing committee work just now but hope to have something definite for the February

number of your valuable paper. We are going to communicate with the various municipalities of the province and find out the sanitary conditions. Then when we have something definite we will wait on the provincial government and show that important body the need of a provincial sanitary law that will govern the whole province.”

Requests will be sent either to civic officials or members of the sanitary trade in every municipality asking for information as to the sewerage arrangements, plumbing ordinance, prevalence of disease, etc. When sufficient information has been secured, the officers will be in a position to approach the government with definite facts to back them up in their contentions.

## Convention to be Held July 18 to 25

Calgary's Local Association has Determined Upon This as the Best Time for the Gathering of the Canadian Society of Sanitary and Heating Engineers—A Date Which Will Suit All—The Distance Which Many Must Travel to Attend the Sessions is Great, But an Effort is Being Made to Make the Benefits Great Also—The Trip Itself an Attraction to Many.

The date of the coming convention of the Canadian Society of Sanitary and Heating Engineers has finally been fixed. The Calgary officials have been considering this for some time, and have now determined that the gathering, from which so much is expected, shall be held from July 18 to 25. An announcement of this was received by the president of the society in Montreal this week.

A great deal depended upon the selection of a suitable time for this convention. It must not interfere too much with the master plumbers' regular work, and it must come at a season when all will be glad of an opportunity to visit the West. Both these requirements are met by the dates which F. A. McVey, of Calgary, announces as the ones considered most suitable for the gathering by the Calgary local association.

## Time Needed for Selection.

Now that the time for the convention is definitely known all that remains is for the officers to arrange for the sessions, and for the locals to determine who they will send to Alberta to represent them. There is plenty of time for all this, and yet not too much. The

programme will round slowly into shape, and time is needed for the selection of delegates. Indeed this is a question which will require some careful consideration. When men are to go as far as some must go to attend this convention, it is necessary that the right ones be sent.

There has been some fear that Calgary is too far distant. Men have said that the convention was held in Fort William last year, and that it should be further east this season. And yet events which have occurred in the past seem to show that there is no good cause for this uneasiness. When the society convened in Winnipeg some years ago it feared that the attendance would not be as large as could be wished. But the reverse proved to be the case. There was a fine attendance, and the convention was one of the best ever held.

## Very Distance is Attractive.

It seems much the same thing will occur this year. Calgary is a long way off from some of the eastern cities and towns. But distance, it will be remembered, “lends enchantment to the view.” Some there are who will be anxious to take in the convention simply because

it is some distance away. Everyone, in these late years, has heard about Calgary, and many are anxious to see this progressive city. A number are already preparing to attend the convention whether they are appointed as delegates of their local association or not. There are six months to come yet before President Walsh's gavel calls the gathering to order. In those months it is likely many more will determine to take this opportunity of seeing the west and of attending a convention, which it is believed, is going to put the sanitary and heating engineer in a stronger position than ever before.

#### A Wise Change.

One change which is to be suggested in the constitution of the society will have an effect upon the coming gathering. This relates to the election of officers. In the past nominations have been made upon the last day of the gather-

ing, the election following immediately afterwards. By the proposed change the nomination committee will make its suggestions the second day of the convention, and the delegates will have ample time to consider the various names before the vote is held on the closing day.

Of course there is to be a social as well as a business side to the gathering. Arrangements for this are already being made, the Calgary officers being determined to make the meeting held in their city one which will stand out long in the memories of those attending.

Nothing definite can be announced as yet regarding rates, though the officials of the society are already taking this matter up with the transportation companies. From what they have learned, however, those considering the trip West may rest assured that they will be able to travel at a satisfactory reduction.

year, and the information gathered by Dr. McCullough and the City Engineer will largely determine the kind of system to be constructed.

#### INSPECTOR IN SCHOOLS.

Toronto, Dec. 26.—By adding to the staff of the Superintendent of Buildings an inspector of plumbing, heating and ventilation, the Property Committee of the Board of Education hopes to secure better results in future in the sanitary construction of school buildings. It decided yesterday afternoon to recommend the appointment of such an inspector, and it also resolved that the Superintendent should be directed to consult with a heating, ventilation and sanitary engineer in regard to the planning of future buildings, the latter's services to be paid on a percentage basis.

#### ELECT OFFICERS.

Montreal, Dec. 30.—Sanitary and Heating Engineers of Montreal are all ready for the new year. The organization meeting of the association has been held, and the officers for the ensuing year elected as follows:—President, J. R. Medowcroft; vice-president, Jos. Thibeault; second vice-president, R. J. Macauley; secretary, Arthur Gardner; assistant secretary, W. A. Stanley; chairman sanitary committee, P. C. Ogilvy; chairman arbitration committee, W. R. J. Hughes; chairman legislation committee, Jos. Laurier; chairman apprenticeship committee, Jas. Griffin; representative to Builders' Exchange, J. R. Medowcroft; audit committee, Jas. J. E. Walsh, John Watson, Wilfrid David.

While the selection of these officers was the principal business transacted at the meeting held last week, but little time was taken up with the election. The nomination committee had considered the men best qualified for the various positions, and the suggestions made by this committee carried unanimously.

One other matter of great interest to Montreal members of the trade was discussed—that was the annual dance and euchre. It was unanimously agreed that such a gathering must be held, for in the past it had been a great success. Some discussion arose as to the place in which the dance should be held, the members coming from Canada's model city being rejoiced by the decision reached that the event should take place in Victoria Hall, Westmount. The date of the event was fixed for January 31st., and the following committee was appointed to make final arrangements:—J. R. Medowcroft, W. R. J. Hughes, Jas. Ballantyne, W. David, J. E. Walsh, Jos. Briard, Walter Ryan, John Watson, P. C. Ogilvie and Jos. Thibeault.

## New Legislation that Will Affect Sanitary Conditions in Canada

#### DIVIDED INTO DISTRICTS.

Montreal, Dec. 28.—The division of the Province of Quebec in ten sanitary districts, each of which to be under the immediate care of a medical inspector paid by the Government, was finally agreed upon at the Provincial Board of Health. The following places will each be the headquarters of a district: Metapedia, Fraserville, Quebec, St. Hyacinthe, Sherbrooke, Valleyfield, Montreal, Hull, Three Rivers and Chicoutimi. Each district will include from 75 to 125 municipalities, according to the density of the population.

#### APPLICATION REFUSED.

Vancouver, B.C., Dec. 28.—Dr. Underhill, medical health officer of this city, has been turned down in his application to have a board of experts created to pass upon the technical qualification of all plumbers applying for licenses and registration in British Columbia. With many plumbers doing work in and around Vancouver, where a very large amount of building is going on, some of the work is not up to standard, and it was thought this method might be taken to ensure perfect competency in the workmen engaged. The provincial government to whom application was made, regarded the proposal as too radical and too far-reaching. The government stated that full power was already vested in Vancouver, and each other city in the

province under the Municipal Clauses Act for the effective regulation of plumbing and sanitary questions generally within its corporate boundaries.

#### TO TEST NEW FILTERS.

Montreal, Dec. 23.—A test of interest to students of public hygiene is being carried out under the auspices of the Provincial Board of Health at Ahuntsic, where a non-submerged filter has been installed, and an ultra violet ray machine is in course of construction.

The non-submerged filter, which owes its origin to the experiments of Dr. Miquel and Mouchet, of the City Bacteriological Laboratory, of Paris, and of Mr. Leon Janet, of the Paris Water Department, allows the unfiltered water to sprinkle down and percolate through layers of sand instead of the sand layers always being flooded with water, as in the submerged type.

#### ON A TOUR.

Dr. J. W. S. McCullough, Provincial Health Officer, left Toronto for New York yesterday, where he and City Engineer Ker, of Ottawa, will commence a tour of the principal United States cities, inspecting water and sanitary methods.

The city of Ottawa is preparing to install water and sewage systems that will in the future protect the citizens from a recurrence of a typhoid outbreak such as the terrible one of last





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## THE CELLAR DRAINER.

Editor Plumber and Steamfitter,—Will you be kind enough to show me by a drawing how a cellar drainer should be connected?

W. H. J.

Toronto, Dec. 27.

It would be well to place the appara-

first floor does not heat at all sometimes, and never as hot as the second storey radiator. What can I do in the matter?

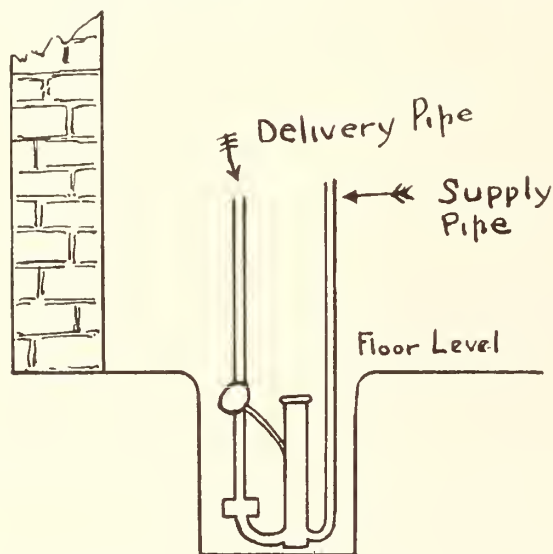
A. G. Story.

From your description we should conclude that the second storey radiator "robbed" the first storey radiator. It will not be a difficult matter to remedy

fire bricks, the drawing shows it looking down into the fire box. Please offer suggestions.

J. H. Horton.

Perhaps the coil was of too small pipe. It might be possible that, in running it as shown, that you have it trapped at some point. A commoner way of



tus in one corner of the cellar so as to have it out of the way, although it does not occupy much room. Have it sunk in a hole and have the cellar floor sloped towards the hole. It would be well if the cellar floor is cemented. We have shown the floor level and the supply pipe; also the delivery pipe. The delivery pipe can empty into an open sink, which should be trapped and vented. When the water is high enough in the hole, the apparatus will start working, and when the water is out of the whole it will stop working.—D. C. H.

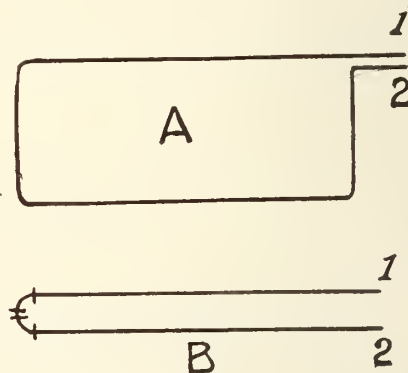
## DOES NOT WORK WELL.

Editor Plumber and Steamfitter,—A job that I have been called on to prescribe for works as follows: In the cellar a radiator on the first floor and one in the room directly above are taken off the same branch in the cellar. Now, the pipes to the radiator on the second floor are run behind the partition, and if they have to come out it will be the duce of a job. The radiator on the second floor heats, and the one on the

this, nor will it be necessary to stir a pipe in doing the job. Drain the system until the water is out of the second storey radiation, and then disconnect the radiator that is the thief. Remove the tail pieces of the valves from the radiator and in them place some short pieces of steam pipe that may have to be filed a bit to make them fit. You have now cut down the size of the valve. Put the tail pieces back into the radiator, hook it up again and fill up the job. You will then find when you come to fire up the job, that the two radiators will work all right. By doing the job thusly, you do not have to change either the pipes or the valves, and the job should not occupy more than two or three hours all told, unless something goes wrong.—D. C. H.

## COILS FOR USE IN STOVE.

Editor Plumber and Steamfitter,—I have put in a copper coil in a stove, as shown in drawing "A," and it does not seem to work to the best advantage. I ran it around the fire box on top of the



making the coil would be to construct it of larger pipe and after the fashion shown in drawing "B." Coils are not always desirable, and we believe that the proper size of waterback would give you very much better results. The figures one and two in each drawing represent the part of the coil that projects through the side of the fire box.—D. C. H.

## WHAT IS A MASON'S TRAP?

Editor Plumber and Steamfitter,—In reading an article the other day I came across the words, "draining into the mason's trap." Will you tell me just what a mason's trap is, and oblige, One of your readers.

Toronto, Dec. 29.

A mason's trap is one that used to be constructed by masons. The traps were made generally of brick and cemented. We could not advise their use, for they do not readily cleanse and are apt to soon become foul.—D. C. H.

## HOW MUCH PRESSURE?

Editor Plumber and Steamfitter,—Please tell me about how much pressure would be necessary to run a cellar drainer under ordinary circumstances.

George Smith.

We believe that certain drainers will work with as low a pressure as five lbs.

pressure for each foot that the water is required to be elevated. If you have a job where you must lift the water more than ten feet, we advise you to be somewhat particular as to the kind of drainer you use, and also the manner in which it is installed, or you may not get the best of results. Get several catalogues and study them up, and if you do not know where to write for them let us know and we will send you the information.—D. C. H.

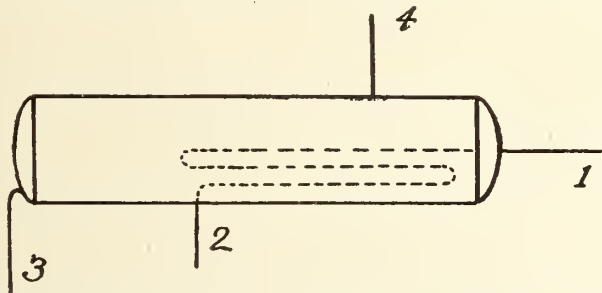
#### STEAM COIL IN RANGE BOILER.

Editor Plumber and Steamfitter,—Can a steam coil be used on a house heating job to advantage in heating a range boiler? Show a connection.

C. C.

Calgary, Dec. 14.

We show one that might be installed in the cellar. The coil is heated from steam entering at figure "1," and passes through the coil leaving at figure "2." Cold water might enter through pipe "3," and the hot water be taken off at "4." This drawing is to give a general idea. A coil can be used in an upright range boiler as well. These steam coils are generally made use of in buildings where a large amount of hot water is desired and with the excellence with



which water fronts can be made to work, or the cheapness with which a gas heater can be run, we would not think that, in a small house job it would be advisable to use a steam coil unless there was some unusual conditions.—D. C. H.

#### SHOULD "BLOW-OFF" CONNECT SEWER?

Editor Plumber and Steamfitter,—In connecting up the "blow-off" of a steam heating job, should it be run into the drain system of the house?

S. J. C.

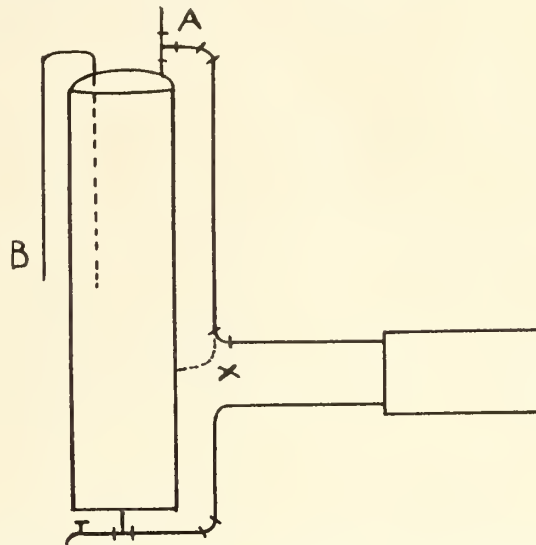
Montreal, Dec. 11.

We have observed that this has been done in numerous cases, but it is not a wise plan for many reasons. The heating apparatus should not be drained directly into the sewer, but should be drained first into a tank which should be trapped and vented, and perhaps in some cases a back pressure valve as well.—D. C. H.

#### WATER BOILS IN THE WATERBACK.

Editor Plumber and Steamfitter,—I connected up a range boiler and water-

back as shown in the drawing I send to you, and, after a fire has burned for a while, the water seems to boil in the waterback, unless a large amount is



drawn from the job. Please tell me what to do.

J. B.

Montreal, Dec. 20.

Make a connection at point "X," and connect into the side of the range boiler also. That will give you all the advantages you now have from the top

tub are connected together. Is this all right? If not, then why not?

George DeVoe.

It may work out all right where the

job is vented correctly and the runs short; but a better way would be to have each fixture drained separately. One reason would be that whenever anything went wrong with one fixture the other one would still, in all probability, be in working order. It is very desirable that each of the fixtures be given a separate drain if it is possible to accomplish it.—D. C. H.

#### THE SIZE OF THE ROOF VENT.

Editor Plumber and Steamfitter,—Is a two-inch vent through the roof large enough to do the work and not stop up?

J. A. Dunston.

On an ordinary bathroom, in a warm country, it possibly might work all right; but in the colder climates it would be very apt to stop up with the frost. We have known of instances where a four-inch soil pipe became stopped up with frost after unusual pains had been taken to prevent the same. We would not advise that the two-inch vent pipe was large enough, and in the very cold climates we believe that even five-inch would not be any too large a size to use through the roof in this manner.—D. C. H.

#### HOW TO FIGURE SIZE.

Editor Plumber and Steamfitter,—Can you give me any information on how one would go to work to figure the right size of rain leaders to run on an ordinary 12-roomed house?

H. G. M.

Vancouver, Dec. 7.

We believe that it is generally figured that one square inch of opening in the pipe will take care (under ordinary circumstances) of about two hundred and fifty square feet of roof surface. From this information you will be able to tell the size of pipe needed by find-

connection and do away with the nuisance.—D. C. H.

#### WHY "T" FITTING IS OBJECTIONABLE.

Editor Plumber and Steamfitter,—I see that some people object to the "T" fitting on a drain system. Will you please state the reason?

Green One.

It is said that they should not be used, because the drainage running into the "T" strikes the far side of the fitting, and fails to take the right direction smoothly, and that after a while there will be a danger of the fittings becoming stopped up. The "T" may, however, be used on the venting part of the job. There has been considerable discussion about the matter, but we believe that the majority do not favor the "T" on the drainage part of a plumbing system.—D. C. H.

#### CONNECTING LAVATORY.

Editor Plumber and Steamfitter,—I have seen some jobs where the waste to the lavatory and the waste to the bath



ing the amount of square feet of roofing that will have to be drained into the pipe and then consulting a table of areas of pipes which you will find in many catalogues and some plumbing books, or the area of circles in the arithmetic.—D. C. H.

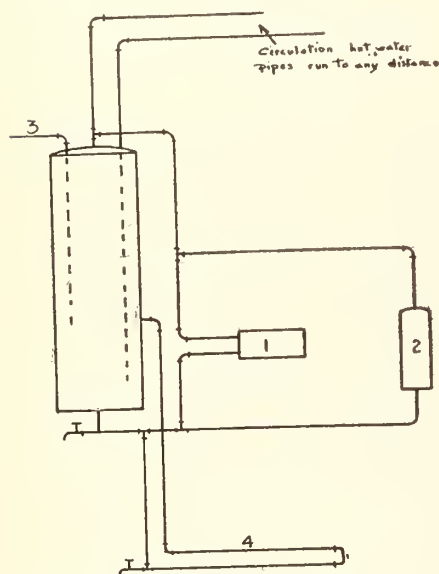
## CONNECTING UP BOILER.

Editor Plumber and Steamfitter,—Could you give me some information on how to connect up a 50-gallon boiler with a range, a gas heater and a coil in the furnace in the basement; what size of pipes to use, and make them work independent of one another, if necessary?

M. A. C.

Vancouver, Dec. 8.

If connected up as per the drawing



we publish, we believe that the job would work successfully.—D.C.H.

## IMPROVING CIRCULATION.

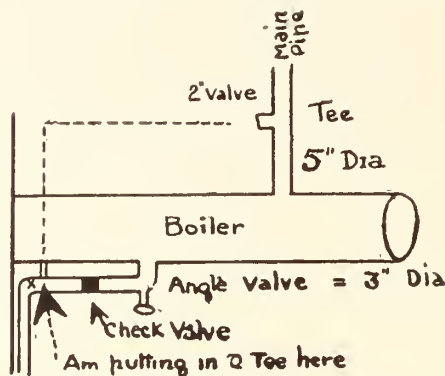
Editor Plumber and Steamfitter,—Enclosed you will find a rough sketch of a job that I am working on. It has been in use for 28 years, and it now needs new returns, and I was thinking that I could improve the circulation by connecting a 2-inch pipe to the main riser, as there is a "T" already plugged, and to the return back of check valve. Would it not make the returns work faster? You will see by the dotted lines how I intend to do this. I was also thinking of putting in a valve close to main. Would it be of any use?

J. H. Barrett.

Ayr, Dec. 14.

We do not see, exactly, how the connection made as per drawing enclosed is going to help matters materially regarding the circulation. If the job is rightly balanced, you do not need any check valve on it at all. We should surmise that if you desire a quicker circu-

lation that the job would be assisted more if you installed two or three larger sized air valves (special ones used for the purpose) on the main at convenient intervals, which would take out a lot of air in the big main, and we believe



that such a course would greatly quicken the circulation. A valve in the main is a very convenient thing to have at times in case it is desired to make repairs without drawing the fire.—D.C.H.

## CONNECTING INTO WATER CLOSET DRAIN.

Editor Plumber and Steamfitter,—Is it proper to wipe the bath tub drain into the lead bend of the water closet? A Plumber.

Vancouver, Dec. 7.

It has been customary to follow this practice in many parts of the country. We do not state that it is the best practice, for there are many objections to such a proceeding. The joint may be imperfectly wiped and offer certain obstructions on the inside that will allow accumulations. We believe that it would be better to run the bath tub drain independent of the closet drain, if it is possible so to do.—D. C. H.

## WHICH STYLE OF CLOSET?

Editor Plumber and Steamfitter,—Changing to be in a plumbing shop, I picked up one of your papers and saw this department. Now, I am going to put in a bathroom before long, and wish to ask you if you would advise me to get a low down or a high up style of closet? Any comments on the subject will be welcomed.

By Chance.

Both types in a first-class article are good. If you have a large bathroom with plenty of height, you can use the high tank style all right. The low down closet possesses the advantage of being easy to get at in case anything happens to the tank. It is also covered, and no dust, dirt or articles thrown around by children can get into said tank. The necessities of the room and family should govern the choice.—D.C.H.

## WHAT IS A FLUSHING VALVE?

Editor Plumber and Steamfitter,—Will you kindly tell me what a flushing valve is and how it works?

Valves.

A flushing valve is one which is used in the place of a closet tank, to flush out a water closet. These valves are made according to several different patents. In general the valve is started in action by pushing a button or pulling a lever, and before the valve closed down it has delivered (or allowed) water enough to flow to flush the closet. We believe that certain valves are so made that the amount of water delivered can be regulated, if desired.—D. C. H.

## IS A TANK PRESSURE DESIRABLE?

Editor Plumber and Steamfitter,—I heard a plumber say the other day that it was not desirable in town or city to ever have any tank pressure, and I would like to have your idea on the matter.

H. R.

We think he must have been trying to get your "goat" a bit. There are different times and places when it is desirable to have a tank connected to the plumbing system. Suppose you are at the far end of a waterworks system, and on a small line where there are very many taps. In such a case it might result in great inconvenience if all were using the line at the same time. Besides the tank pressure is always approximately the same, a thing which cannot be said of the city waterworks. With a tank pressure in the ordinary dwelling, the pressure is less, and, therefore, the danger from leaks is not so great, although "leaks" should not be expected if the plumber does his work as it should be done.—D. C. H.

## Municipal Undertakings.

The ratepayers of London, Ont., will vote on a by-law to raise \$125,000 for a storm sewer system.

The Ottawa council are considering the submission of a \$2,000,000 by-law for a filtration plant.

## Public Buildings.

The hall of the Independent Order of Oddfellows at Duncan's, B.C., recently destroyed by fire, is to be rebuilt.

The Roman Catholic diocese plan to erect two schools at Hamilton, Ont., to cost \$60,000.

About \$100,000 will be spent in remodeling and equipping the Y.M.C.A. building at London, Ont.

The clerics of St. Viateur have applied for permit to construct institutions for deaf and dumb and blind on St. Viateur, Bernard and Bloomfield streets, Outremont, Quebec.

# The Cost Question in the Plumbing Business

Close Attention Should be Paid to Business Detail — Some Data on Keeping Track of Overhead Expenses—A Rule for Guidance in Proper Figuring.

THE following paper on "The Costs of the Plumbing Business," was delivered by S. H. Morgan, of Detroit, at the annual convention of the Michigan State Association of Master Plumbers, held at Jackson, Michigan.

The spirit of modernization has taken a strong grip on the plumbing situation. It is demanded that the plumber give his customer the most modern there is to be obtained in plumbing installation, practice and fixtures, and it is not only fair but necessary that the plumber be modern with himself.

Somewhere we have read the words "Know Thyself." Similarly it could be said "Know Thy Business," and it is part of the make-up of every successful business man to know always the exact and true condition of his business.

This brings us to the point where we may examine into the conditions surrounding the plumbing business, and the men engaged in it, and, I believe, ascertain definitely what is the largest factor entering into the lack of financial success of the men so engaged.

The average man contemplating to engage in business is one who has served an apprenticeship and advanced to a journeyman, one who is either a poor mechanic unable to hold a steady position, or is a good mechanic who has worked hard and saved up a few dollars. In the first case he goes into business because it seemed the only chance left for him which will enable him to make a living for his family. In the other case he desires to better his condition and thinks he can make more money than by working with the tools.

Whatever the incentive may be, it is very rare that a man engages in the plumbing business who has had the advantage of any business training, and almost invariably has very little education, the majority not even having gone

## START OUT RIGHT.

Start out the New Year right. In the past you have not paid as much attention to the business end as you should; you have, perhaps, been careless in your methods of looking after costs. You have figured carelessly and have not been above cutting your price. If you have been guilty of all or any of these things in the past, turn over a new leaf and eschew them rigidly in the future. Get right down to business and run things from now on in a strictly business way. Start the new year right.

The accompanying article gives some good hints on the proper way of figuring work and financing a sanitary and heating business. It is well worth close study.

through the grammar grades of our public schools. He may understand the principles involved and be proficient in the practice of installation of plumbing equipment but that does not by any means equip him as a business man. He knows nothing of the science of accounts or of the methods necessary to be used in order to conduct a successful business.

The records of our country show that only about one in a hundred who engage in business generally, ever make a success of it and it must be conceded, a large percentage of the men in business, generally in all lines, are educated and experienced.

What chance then, think you, has the average plumber of success. I should say not over one in a thousand and if you will look the field over you will agree with me that such is probably a fair proposition.

How many in this room or in the state who have been in business for any considerable length of time can show an accumulation of as small a sum as one thousand dollars per year, direct from their plumbing business, for each year they have been in the business. And yet look about at men in other lines and this is not so. What is the matter? Where is the trouble?

The average master plumber runs his business in a haphazard and slipshod manner; he knows very little or nothing of what it costs him to do business. He does not take into account when figuring on a contract the percentage of his operating expenses that such contracts must carry, but blindly estimates the cost of labor and materials, adds to this a paltry percentage which he is pleased to call profit and takes the contract believing he is going to make some money out of it, when as a matter of fact had he known what it cost him to do business he would have known that the price was below cost. In addition and even worse than this he many times lacks methods in arriving at the cost of the labor and materials and does not include all the material required upon the job, makes a mistake in counting the number of fixtures, misses an entire bath-room, leaves out the gas fitting or makes any one of a thousand other errors possible and even probable.

How many contractors make a careful estimate of the pounds of caulking lead required, or the quantity of oakum needed? Almost invariably such items as gasoline, candles, screws, etc., are omitted from the estimate and yet they are needed and cost money.

In Detroit we have a printed estimate sheet, with headings, covering practically all the items necessary to be used in an ordinary plumbing installation and with blank spaces for description of spe-

		If your cost for doing business, figured on sales, equals one of these percentages															
and you	%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	
add to your																	
cost of																	
labor and																	
materials																	
one of																	
these																	
percentages																	
	20	6%	5%	4%	3%	2%	1%	0	1/2	1 1/2 loss	2 1/2 loss	3 1/2 loss	4 1/2 loss	5 1/2 loss	6 1/2 loss	7 1/2 loss	8 1/2 loss
	25	10	9	8	7	6	5	4	3	2	1	0	1 loss	2 loss	3 loss	4 loss	5 loss
	33 1/2	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	40	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

your net profit will equal the percentage found in column under the percentage of expense, and opposite the percentage added to labor and materials. If your expenses are 20% and you add 33 1/2% your net profit is 5%.



# PLUMBER AND STEAMFITTER

cial fixtures, and other items entering into the cost.

A man using the sheet will draw off his materials in the same routine on every job and should check over the unused headings besides going over the plan and specification carefully a second time to guard against errors.

After the materials are all drawn off and priced he must estimate his labor, which is a very difficult thing to do with accuracy, and here we cannot help him except to suggest he estimate the time required on each part of the job separately, based on the wages paid, and the amount of work he can get done for a day's pay, using his experience on previous work as a guide.

We will now admit he has allowed a fair amount as the estimated cost of labor and materials, but is this the cost of his completed contract? It is not, and he has yet to encounter one of the most serious problems which enter into the conduct of the business, viz., the cost of operation and its relation to the contract.

With only an estimate of the cost of labor and materials and no idea of operating expenses he puts on so small a percentage to cover expenses and profit that in many cases the replacing of a single defective fixture wipes out the entire margin, to say nothing of the many other losses which may, and quite often do occur, which were not figured on. Is it any wonder he is not getting rich? Nay on the contrary it is a marvel how he continues in business as long as he does, and this is largely explained by his being guilty of the first sin alluded to in my paper. The jobbing end of the business is done on an entirely different basis and while some of our members are guilty, no doubt, of overcharging on this work, I believe it almost an impossibility, but it is from the results of this work largely that we receive the uncouth name before referred to. But what are the facts: The majority of this work is on small jobs, many of them at a considerable distance from our place of business, and they are wanted done in a hurry, and very seldom do our customers give us sufficient information about the nature of the work to be done. Very often the trouble observed by our customers is only the result of the actual difficulty and it necessitates the loss of much time unnecessarily, in making repairs but this is not the fault of the master plumber, although the customer usually claims it is. It is almost invariably the conditions surrounding repair work that cause the bill which follows to seem unreasonably high. It is usually this class of work that calls forth the unjust complaints about prices.

It must be conceded by all that the jobbing part of the business does bring to the master plumber a greater margin

of profit than his contract work and very often this part of his business balances the losses from his contract work and enables him to remain in the business which should produce a living profit if we expect to succeed.

There are comparatively few master plumbers who have adopted accurate book-keeping methods, consequently there are but few who know what their expenses are and what relation or percentage such expense bears to their total volume of sales. It is absolutely necessary that a man should know this in order to make an accurate estimate on the cost of installation of plumbing work.

We took this matter up in Detroit a few weeks ago in an effort to do some work along educational lines and with a view to getting our members interested. It was about the first of the year and we wanted to get them to put their bookkeeping on a systematic basis and to enable them to figure out for themselves from their own books why they had not made money. This resulted in finding that quite a number of our members had operating expenses averaging approximately 20 per cent. of their sales. It was found necessary with some of our members to make an explanation as to what was meant by percentage and to show them how to figure percentages. We found also that very few were keeping accurate account of their expenses, some had one expense account to which they charged not only the expense items but the labor as well, while others charged expense items to merchandise, and in various ways handled their accounts so that no correct idea of their operating expenses could be ascertained without having an expert go over their business for the year and straighten the items out. I do not believe master plumbers in Detroit are much different from those in other parts of the country so would expect to find about the same conditions elsewhere.

I advocate the keeping of a set of books with separate accounts for the different expense items, although they may be grouped in any manner you wish, so long as they are entirely separated from the other accounts on the ledger. Below you will find a list of the items necessary in the conduct of the plumbing business:

Salary .....	\$1,300.00
Rent .....	240.00
Light .....	18.00
Heat .....	30.00
Telephone .....	72.00
Horse and Wagon .....	200.00
Bookkeeper .....	516.00
Insurance .....	25.00
Taxes .....	30.00
Cartage .....	50.00
Car-fares .....	100.00
Tools .....	100.00

Collections .....	125.00
Bad Accounts .....	100.00
Driver .....	450.00
Waste Materials .....	125.00
Replacing Defective Goods...	50.00
Labor Lost .....	150.00
Allowances .....	75.00
Int. on Capital 3 p.c. on \$4,000 .....	120.00
Postage .....	25.00
Stationery and Printing ...	40.00
Association Dues .....	24.00
<hr/>	
\$3,965.00	

In making this list of expense items I have covered such expenses as we in Detroit find upon our books and the amounts set opposite each item were arrived at by consultation with a number of men. They are not expected to appear accurate to the critic, but I am sure will represent in the aggregate a fair estimate of the cost of carrying on a plumbing business in a city like Detroit, where the business represents a volume of say \$20,000.

The item of salary is one not to be overlooked and is what we pay a journeyman, or in other words what the master plumber would have earned had he been still carrying the kit as a journeyman. Rent, light and heat are all necessary items; the item for telephone will vary in many localities. The charge of two hundred dollars for a horse covers its feed and care, also the wear and tear on harness and wagon and the depreciation on the horse itself. The amount included for bookkeeper is too low if you expect very efficient service and I would not recommend it as a place for economy.

The item of insurance covers only a premium for fire losses whereas it should also include an indemnity policy.

Our taxes we cannot avoid. Fifty dollars for cartage is for items paid out at times when our one horse cannot do all the work. The item of car fares include those spent when looking after work as well as for men going to and coming from jobs. One hundred dollars will hardly cover wear and tear on tools and new ones bought to replace broken ones. The item for a driver at nine dollars per week is very low for most localities and if we drive our own rig it costs much more than that. Waste materials include odds and ends of pipe, broken lengths of soil pipe, fittings with sand holes, etc. The next item cannot be definitely figured upon but in many cases proves very expensive, especially if we have used a cheap fixture when we should have used a guaranteed one. Labor lost represents that time of our men for which we pay them and that cannot be accounted for in time spent on either contract or jobbing work, and this in a poorly conducted shop is a se-



The balance of the items we all understand and they are necessary in the conduct of every business.' You will notice I have omitted advertising but as in many places it is a necessity it should also be included.

These items foot up a total of nearly \$1,000, but we will, as a conservative basis for our figurer to follow, call it an even \$3.500.

The figures as tabulated herewith will indicate to you the margin of profit you will secure providing the cost of doing business is represented by one of the percentages in the upper line and you have added to the cost of labor and materials one of the percentages in the left-hand column. Your cost of doing business must be represented by the percentage which your expenses bear to your total sales.

As an example : If your cost of doing business is 20 per cent. of your sales and you have added to the cost of labor and materials 33 1-3 per cent., you will have made 5 per cent. net profit on sales as shown in diagram. If your cost of doing business is 18 per cent. and you add 25 per cent. to cost of labor and materials your net profit is 2 per cent. of sales.

I realize that a heavy volume of business is done upon which is placed a less percentage than I have shown in the left hand column of the diagram, but when you have examined the table carefully and figured up your actual expenses you will find it would be foolish to consider such figures, as they must in all cases show a loss.

We will take for instance the man whose operating expenses are 15 per cent. of his gross sales, and who has secured his work by adding to the cost of labor and materials 20 per cent. He can expect if he has good luck and no accidents, to make 12-3 per cent. on the volume of his business. If his operating expenses are 20 per cent. of his sales and he has added 25 per cent. to the cost of labor and materials he has nothing left for profit.

Do not be misled into figuring small margins of profit because your supposed cost is only an estimate at best and your labor may be estimated too low, or your materials may be figured below what you afterwards find out you must pay for them, and either or both of these items must come from your estimated profit.

Now, gentlemen, these figures are not something I have placed before you to mislead you, they are definite and accurate and if you are not convinced of their accuracy, figure them out for yourself or get someone else to do it for you. I am trying to help you by calling your attention to conditions and facts, hoping thereby to make better business men of you, and to enable you to see wherein you have made a grievous mistake in not knowing your business.

We have a great many men in Detroit who have been trying to do business by adding 20 per cent to their labor and materials and whose operating expenses are 20 per cent. of their sales, which indicate on the table a loss of 3 1-3 per cent. on the business they have done.

The man whose operating expenses are 20 per cent. of his sales cannot be a successful business man, unless he allows his margin of profit in the lower column, or 40 per cent. and the man who does not put such a per cent. on his work is sinning against whom? Sinning against himself. I would suggest that when you go home you do not take the expense account which I have tabulated above, but that you make a careful examination of your books and find out what your operating expenses were for the year in 1909. Find out what your total sales were and by dividing the one by the other you will get the percentage which they bear to one another. Then place yourself where you belong in the upper column, decide in your own mind how much profit you want, and figure your work for the balance of this year upon a percentage, which will enable you to face your loved ones to whom you owe more than all the rest.

As I stated at the outset there are two classes of work, jobbing or repair work and contract work. We will use for argument a \$20,000 volume of business, one fifth of which, or \$4,000, is jobbing work and the balance contracts. We estimate a gross profit on that \$4,000 of \$1,500. We will take the operating expenses into consideration as shown at \$3,500. The jobbing sales is one fifth or 20 per cent. of the total sales, consequently the operating expenses will apply in the same ratio, one fifth of which or \$700, goes against the gross profit of the jobbing sales, leaving a net profit of \$800 on that part of his business. There is still left \$16,000 worth of work to be done under contract carrying on operating expense of the difference between \$700 and \$3,500 or \$2,800. Figuring it back, we find that his cost of labor and materials is \$13,333.33 showing a difference between labor and materials and sales, of \$2,666.67 which is made up of operating expenses and profit. But, we have previously determined that his proportion of operating expenses applied against this work is \$2,800, or a loss of

\$133.32 on his work. To these operating expenses, as we stated, were 17½ per cent. of the sales, he added 20 per cent. profit on the labor and materials and produced a loss of \$133.33. He has a loss of \$133.33 on contracts and a gain of \$800 on jobbing work showing a net gain of \$666.67 on the total volume of business of \$20,000.

Annual business \$20,000.00. Cost of doing business, \$3,500.00. Johhing sales \$4,000.00.

Gross profit estimated .....	\$1,500.00
Cost doing business, 17½ p.c....	700.00

Net profit .....	\$800.00
Contracts.	

Cost of labor and materials....	\$13,333.33
20 per cent. ....	2,666.67

Contract sales .....	\$16,000.00
Cost of operation, 17½ p.c. ....	2,800.00
Profit added .....	2,666.67

Net loss .....	\$133.33
Profit on jobbing .....	800.00
Loss on contracts .....	133.33

Net profit from business .....\$666.67

On the entire amount of his contract work he made no profit.

H. A. Lee, of Canton, S. D., has adopted a very handy form of shop ticket for use as a time check, as shown

Canton, S. D., \_\_\_\_\_ 1911

## Heating, Plumbing and Sheet Metal Work

Start	7	8	9	10	11	12	1	2	3	4	5	6
Finish	7	8	9	10	11	12	1	2	3	4	5	6

Labor performed by \_\_\_\_\_

Material used for \_\_\_\_\_

[illegible]

in the accompanying illustration. Each employe has a stout leather case containing the tickets in tablet form, and one sheet has to be made out each day with full particulars.



## How Can Delays in the Repair Shop be Avoided?

**An Important Question at This Time of Year—People Who Want a Pipe Fixed, or a Furnace Repaired are Sure to Complain if Work is Not Done Immediately—This Prompt Attention is Difficult to give, for the Calls Do Not Come Upon the Plumber Singly—One Man Decided to Keep in Close Touch With His Journeymen.**

Winter has been somewhat tardy this year. But winter is here with a vengeance now, and though the great amount of building is completed there is yet much for plumbers to do. True these are the off months for new work—though isolated houses are having fittings installed—but it is a great time for repairs. When anything goes wrong with the heating plant in winter first aid to the injured is needed. It is no time for delay.

This means business for the plumber, but in some cases it means also abuse. When they are suffering cold because of some breakage, men become exacting. They will not brook delay; at least they will not brook this with only a mild protest as in the spring or summer.

### Many Complaints.

In the store of a plumber the other day a representative of Plumber and Steamfitter was privileged to listen to a rather torrid conversation—to several torrid conversations in fact. In a few minutes the master plumber was besieged by several men. One had telephoned early in the morning about a frozen pipe. One had spoken about a defective furnace. Another had declared his grate was filling the room with smoke, and he had taken the plumber's word that this could be fixed. With one accord these men complained that their work had not received the prompt attention which had been promised. The man with the frozen pipe had a frozen pipe still, though it was quite late in the afternoon. The man with the defective furnace was still suffering the inconvenience which came as a result, for the needed repairs had not been made. The man with the smoky grate still had the option of permitting his room to be untenable from smoke or cold. The promised alterations in the grate had not been made.

### What is to be Done?

As the plumber listened to these complaints he felt far from pleased. He had ordered his men to attend to these things along with other jobs, but they evidently had not been able to get around as quickly as he had hoped.

Finally the complainants left, still protesting, but convinced that they would get the quickest attention possible. Then, in the comparative quiet

which ensued, the master plumber, with a worried face, turned to the others in the room and expressed his opinions.

"What are we going to do?" he asked. "Things aren't always this bad, but often we get complaints because work is not done as quickly as people would like. I don't see how we are to help the delays, and there is no doubt that they are bad for us. If we keep a man waiting long for a repair job he may become dissatisfied and go somewhere else when he has a job which is more worth while—some new equipment to install for instance.

### Trouble Calls Come in Clusters.

There seemed no reply, so the plumber continued: "You see the trouble is that all these breaks seem to come at the one time. There is a heavy frost and pipes freeze. Naturally a hurry up call comes to us in consequence. The cold weather also shows the defects in the heating system. Again we are called on. We only have a certain number of men, and though they may have been doing little or nothing for a day or two, they are unable to rush so hard that they can accomplish all this repair work in the quick order that people want.

"Then we can't tell how long a job is going to take from what people say of it. A man may go to the house, locate the trouble and repair it in a few minutes. Then he can be off to another place where assistance is needed. But the first trouble may turn out to be an all day's job, and the other work assigned to the journeyman must be neglected.

"One thing I am going to do from now on," continued the troubled master plumber. "I'm going to insist that my men telephone me if they find a job will take longer than we expected. That will help a little I think. If I find that a man will be unable to do all the work I outlined for him I may be able to put another man on it. This delay must be stopped as far as possible. Of course people are unreasonable. They don't look at it from our standpoint at all, but I guess we must try to see their position once in a while too."

### Keep in Touch With Men.

It would seem that this master plumber has the right idea. The complaints he received were just such complaints as come to practically every plumber

from time to time. They can hardly be avoided; yet if there is any way of rendering them less frequent the plumber's life will be made more pleasant and his business more profitable. Keeping in touch with the workmen by telephone would seem a good thing. Delays might occur in spite of this, but the master plumber, who is in charge of all the repairs would know of these. He would be able to explain what was the trouble when complaints were made, and he would be able to send other men to that job, if these other men became available.

A plumber, like every other business man, has as a large part of his stock in trade the confidence of those with whom he deals. If he gets a reputation for doing good work it is a great thing; but if he gets a reputation for promptness too, it is a mighty asset.

### A STATE BOARD.

The amendments to the Illinois plumbing law, says the Plumbers' Trade Journal, as drafted by the Executive Committee of the Illinois Master Plumbers' Association, propose some radical changes. Instead of having an Examining Board of Plumbers in each town or city of 10,000 inhabitants or more, it is proposed that only cities with a population of 300,000 or more shall have a Board of Examiners, and that there shall be another board for the balance of the State, which means that there would only be two boards in Illinois, one of which would be in Chicago, and the other in the State. The power to appoint the members of the Chicago Board would be left with the mayor of the city, while the board for the balance of the State would be appointed by the Governor; and further provide that the master and journeyman plumber member of the board shall have at least ten years' practical experience at the plumbing business. It also makes a distinction between the certificate of a master plumber and employing plumber. The certificate of an employing plumber shall entitle him to engage in the business of plumbing, but not to do any plumbing work. At present there is only two classifications, a master plumber and a journeyman plumber, the words "employing" plumber in the existing law being used simply to qualify or designate a master plumber. The proposed act also provides that there should be a State plumbing code, prescribing rules and regulations for the material, construction, alteration and inspection of all plumbing and sewerage placed in, or in connection with any building in the State outside of Chicago, and that the State Board of Health shall have the power to enforce the provisions of the State plumbing code.





# POINTS ON HEATING

By  
CHAS. H. DENISON



## Chapter 21.

An appliance the fitter can use profitably. That's the steam trap. I have traveled the country somewhat in the past few years and can state that the majority of fitters do not know the proper uses of this appliance as well as they should, or there would be more of them installed. Take a ride along most any steam or inter-urban line for twenty or thirty miles and the chances are that you will see several manufacturing plants that are totally wasting their surplus steam which same could be used to good advantage, if some fitter got busy and explained the use of steam traps to the owner. The fitter don't know, and so the sale is never made. I alluded to this subject, somewhat in chapter 15, but the talk was on the properties of steam and the chance for business rather than steam traps.

Now the steam trap is a mighty useful appliance for by its use many steam jobs can be made to do things which they otherwise would not. It has a well defined place among steam specialties and should be given more attention than it receives from the craft in general.

It can be used to great advantage, in some places, to elevate water; more particularly the waters of condensation to a tank located at some conveniently placed point, such as the roof, or attic on the first floor above the boiler room.

In one case that I know of there was a small building several hundred feet away from the boiler room, and it was desired to heat that same building. It was slightly below the level of the boiler. They had plenty of steam, but had not figured out just how they should get the condensation back to the boiler. A trap agent happened along and the local steamfitter happened to mention the job. The agent looked it over, drew up a plan and sent on a trap. It did the work and several other traps were sold in that town as a result of that fitter's getting wise. This is a very simple incident and I mention it just because there are lots of fitters who do not know what a steam trap will do.

Where the supply of water is limited, or impure, a tank full of practically filtered water is a distinct advantage. So the tank and the steam trap are not to be sneezed at in such cases. The writer has observed steam traps forcing water in pipes that were over 1,200 feet in distance, but I have no doubt but that there are cases where the distance is greater.

A steam trap can be used for draining the water from a line of radiation that is set at the water level of the boiler, or below same. In such a case, the water can be either wasted into some convenient place, or it can be returned to the boiler. Large business blocks, green houses, manufacturies and laundries are some of the different classes that can find a profitable use for the steam trap.

Ask an ordinary fitter just what a steam trap is and he will be puzzled to tell you. How would this do for an answer?

Steam traps are appliances for taking away the condensation from steam systems. I do not say that the definition is perfect, but it is something to go on for almost everybody that has anything to say about steam traps, neglects to tell what they are.

In general there may be said to be three classes of steam traps; siphon traps, return traps and discharge traps.

The return traps are used, as previously mentioned, for the purpose of returning the waters of condensation to the boiler. The trap is constructed so that it has a live steam connection and certain means of controlling the discharge of the trap; such as a valve or a float. In some cases the trap is so constructed that it will tilt and discharge.

Steam is admitted into the trap for the purpose of making the pressure within the trap the same as that of the boiler into which it discharges. A discharge trap comes under the classification of those which allow the condensation to pass to some place having a pressure less than the trap. Bucket traps, float traps, expansion traps and certain tilting traps are some of the different kinds of discharge traps.

As to the force required to elevate water by a trap it may be stated that, generally, for every pound of steam carried the trap will elevate the water two feet. Some traps will do better than this.

Comparing the work of a steam pump with that of a steam trap, the trap will work with much less power. The work that would require anywhere from two to four horse power in a steam pump can be done with less than half a horse power on a steam trap.

If a man is running a plant and throwing away the waters of condensation he is wasting a lot of good money in the course of each year, and he needs a practical education on the subject which it is up to the steamfitter to furnish him.

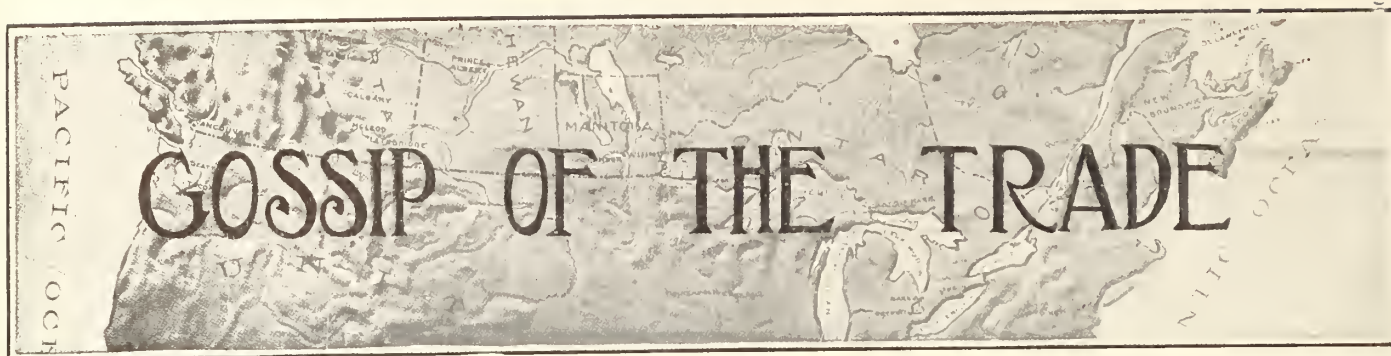
He will burn less coal if the condensation is returned hot, to the boiler than as if he pumped fresh cold water into the same.

Some of the different places where steam traps can be used to advantage are on steam separators, vacuum pans, bleeders, and brewers' kettles.

If you want a list of places to visit and see if there is any look in for business, here are a few of the institutions that might be visited while you are in the mood:—central heating plants. You may find that such places are already supplied. Very well. Study just how the traps are hooked up. Perhaps you might learn something. Possibly, again, the trap (or traps) are not doing the work as well as it might be done and you might get the chance to sell a trap of a different kind. I know of one man that sold seven traps in one season in just this manner.

Mills, such as cotton mills, woolen mills and paper plants are also a good place to investigate. Then there are all kinds of light and power plants. I am giving suggestions, only. If you get to work and make out a list of the places you might visit in your city, you will find that you'll have some calls to make for a long time, just now when the season's work is slacking down.





#### **Died in Hospital.**

James Mortimer, a plumber from Oshawa, died in St. Michael's Hospital, Toronto. He was noticed to be ill on a street car, and was sent to the hospital, where he died. Some difficulty was found at first in identifying him.

#### **A Small Fire.**

A fire occurred in the plumbing and electrical establishment of Geo. E. B. Grimjer, Guelph, due to the explosion of a small lamp. The damage done was small.

#### **New Public Bath.**

The new bath in Haymarket Square, St. Anne's Ward, Montreal, was officially opened yesterday by Mayor Guerin and the members of the Board of Control. Ald. T. O'Connell showed the party over the building, which cost \$35,000.

#### **Large Owners Protest.**

The city of Hamilton proposal to erect an underground convenience at one corner of Gore Park is meeting with strong opposition from the merchants along King street. Thomas W. Watkins appeared with a petition signed by business men, representing a capital of six or seven million dollars. The petition was as follows:

"We, the undersigned ratepayers, having learned that there is a possibility of the city erecting a public convenience in Gore Park, kindly petition against same.

"In our opinion the erection of a convenience would in every way spoil the beauty of the park and instead of being a public convenience, would be a public nuisance. We consider the placing of a public convenience opposite our places of business would be detrimental to our business and depreciate the value of our properties."

#### **Draw a Card.**

Griffiths and Anderson, Toronto, have sued for \$660, the balance on a contract for installing a heating system, on which the defendant has just paid \$100. The

plaintiffs expressed their willingness to leave it to any expert to say if the system is not satisfactory. It was decided that the plaintiffs and the defendants should submit three names of experts on three cards and from the small deck of six his Honor Judge Morgan, would draw a card. The name of the person on the card is to be the expert before whom Mr. Griffiths is to make his demonstration.

#### **Held a Smoker.**

Steamfitters Union, No. 332, Winnipeg, held their annual smoker last night in the Trades Hall with an attendance of more than 200. President J. McRae was chairman.

#### **A Timely Ad.**

Marshall & Co., of Port Arthur, ran a timely advertisement during December, advertising bathroom as Christmas presents.

#### **Have Discontinued.**

Boyd & Rowan, plumbers of Redcliff, have discontinued business.

#### **Going Some.**

Madden Bros., plumbers, in one day recently closed contracts for no less than twenty-one houses to be erected in Simcoe in the near future. This is not bad going for this somewhat staid and venerable town.

#### **News Briefs.**

The Hick, Sehl Plumbing Co., Lethbridge, have a contract at Fernie, and have despatched three of their men, R. Robson, E. H. Fleetwood and G. Turnbull, to look after the work.

Power Bros., Toronto, have assigned with liabilities of \$3,500.

Schwabe Bros., Ottawa, have made an assignment.

Ald. Bob Yeomans, of Toronto, a master plumber, was re-elected as alderman in Ward Two.

Webster & Lindsay, plumbers, have succeeded F. A. Sutton at Victoria, B.C.

#### **TRAVELERS HOLD BANQUET.**

The annual banquet of the Dominion Commercial Travelers' Association was this year attended by a larger number of 'drummers' and their friends than have ever been present at any of the thirty-six previous dinners in the history of this association, nearly six hundred being present.

Everybody is unanimous in saying that everything went off in a most enjoyable manner and no rumors have been heard that any one has voiced any complaint either on account of not having a good time, or on account of having too good a time.

Chas. Gurd, who was elected president by acclamation at the last meeting, occupied the chair and, seated with him at the head table, were Sir Wilfrid Laurier, Judge Doherty, Minister of Justice; Hon. Geo. E. Foster, Minister of Trade and Commerce; Mayor Guerin, Henri Bourassa, Alderman Lariviere, J. Bevan Giles, retiring president; J. S. M. Dougall, C. C. Ballantyne, Fred C. Lariviere, and other notables.

Following the toast of the King, the president, Chas. Gurd, made a short and interesting speech regarding the position of the association in the commerce of the country and also made reference to the good work done by the Mutual Benefit Society.

The toast of the Dominion Parliament was first responded to by Hon. Judge Chas. J. Doherty, who spoke in his own inimitable style, raising a laugh from everybody by his inference that as we were now in an age of horseless carriages, wireless carriages, and so forth we might expect eventually to have a speechless parliament.

Chalmers Presbyterian congregation, Woodstock, Ont., are to build a new church at a cost of \$32,000.

Municipal buildings are to be put up at Victoria, B.C. Plans are being prepared which call for an outlay of \$50,000.

Extensions are to be built to the factories of the Brantford Carriage Co., and the Adams Wagon Works, Brantford.



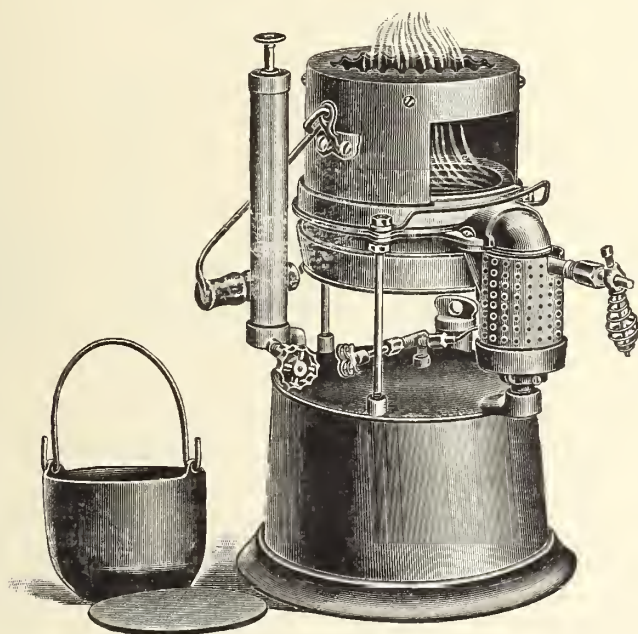
# News of the Manufacturers and Wholesalers

## PATENTS GRANTED.

Owen N. Davies, of Montreal, solicitor of patents, reports the following United States patents granted to Canadians on December 26th:—Hitching device, Michael J. Grady, St. Paul's, Ont., and J. A. Beaty, Stratford, Ont.; high pressure rotary pump, Samuel Hughes, Lindsay, Ont.; storm window, William Johnston and W. Hiron, Winnipeg, Man.; railway track scale, Gurney Scale Co., Hamilton, Ont.; pump, George A. Rockola, Birtle, Man.; stove pot, Bertha Moore, Galt, Ont.

## DOUBLE BLAST FIRE POT.

The Double Blast Manufacturing Co., North Chicago, have issued a booklet, illustrating their tinner's and plumbers' fire pot. One of the chief advantages claimed for it is that it has an independent generating valve for generating, so that in case the operator does not get enough gasoline into the drip cup the first time to properly heat the generator, he may open the valve again and allow



more gasoline to flow into the drip cup until it is hot enough to generate. The generator is made of brass and will not rust or corrode, and has an opening of five-eighths of an inch where the generating is done. Having no small channels it cannot clog, but will always burn a blue flame. The straight brass needle passes through the orifice hole in the generator, and will not increase the size of the hole, the gas is cut off with the end of the valve stem.

## MR. LAFERME LEAVES FOR EUROPE.

J. J. Laferme, manager of the Montreal branch of the Standard Ideal Co., left on Friday, Dec. 29th, for New York. He sailed from there for Europe. The company now has branches in several continental countries, and Mr. Laferme will visit these; see for himself how business is being conducted; and possibly establish some new branches. He will be back in Canada, it is expected, about the end of February.

## A REGULAR DRY DOCK.

Ellison N. Cooper, secretary of the Penn Reduction Co., Philadelphia, has just received the champion bath-tub of the world. It is large enough to float a rowboat in.

Heretofore, Mr. Cooper has had to take his bath in sections. He stands 6 feet 4 inches, and weighs about 400 pounds. The new bath-tub, the pride of his residence, is 7 feet 4 inches long, 3 feet 4 inches wide, 4 feet deep, and

weighs 1,940 pounds. It will hold 800 gallons of water, and is made of solid porcelain 4 inches thick. After two steel girders are put in Mr. Cooper's house to support the bath tub, he will be able to take a bath in comfort.

## NEW EQUIPMENT.

In order to take care of increased business and a new line they are manufacturing, the Wallaceburg Brass and

Iron Manufacturing Co., Limited., of Wallaceburg, Ont., are installing new machines and equipment that will increase their output 25 per cent. These alterations and additions will be completed this present month.

## GREETINGS FROM GALT.

The Galt Brass Manufacturing Co., Galt, Ont., have sent out a neat greeting card. It reads:—

"We wish to extend the greetings of the season. May the bounties of the old year be richly blessed; may the New Year bring you good health, and happiness with prosperity; and may the future bring greater successes than the past in your calling."

## TREASURY STOCK ISSUED.

The Standard Sanitary Manufacturing Co., which has its central offices in the Bessemer building, Pittsburg, recently decided to issue the stock still held in its treasury, thereby issuing the full amount of its authorized capital. This amount was \$341,000 of the preferred stock, which is a seven per cent. non-cumulative issue. Accordingly about 30 days ago, the officers began to place this in a quiet way and now over \$270,000 of the \$341,000 has been placed with former stockholders and others at par and interest. Most of the remainder of the issue has been subscribed for.

The issuing of this treasury stock gives the Standard Sanitary Manufacturing Company a full paid capital of \$7,500,000, of which \$2,500,000 is preferred and

## WILL HEAR MANY MINISTERS.

The Montreal Builders' Exchange, which numbers among its members many plumbers, is to hold a banquet of great interest in the Windsor Hotel on January the ninth. Among those who will speak are:—Hon. Dr. S. Sproule, Speaker of the House of Commons; Hon. T. W. Crothers, Minister of Labor; Hon. Louis P. Pelletier, Postmaster-General; Hon. L. A. Taschereau, Minister of Public Works and Labor, Quebec; Mayor Guerin, of Montreal, and Mr. C. C. Ballantyne, representing the Harbor Commissioners.

The Wellington County Council, Ont., will guarantee bonds to the extent of \$35,000 for a new waterworks system at Harriston.



# PLUMBING AND HEATING MARKETS

## MONTREAL.

Montreal, Dec. 30.—“The past year,” remarked the manager of one large local concern, “has been satisfactory in every way—if those intensely hot days of the summer are forgotten for the time being. The coming year, I expect, will be a banner one. Already it is evident that there is going to be a great deal of building, and the manufacturers are making great preparations for the coming season.”

This is a hopeful note, coming upon the approach of the new year. It does not appear the utterance of an optimist who wished to say a cheery word at this season. It is a sane conclusion reached by a sane business man after a careful study of conditions.

While thoughts are now largely of the coming year, the handlers are not yet able to forget 1911, December is a quiet month usually, but not so this year. Orders are coming in steadily—not from one section only, but from all parts of the country. Every class of plumbing goods seems to be in good demand, the call for iron pipe being especially heavy. This, of course, cannot be entirely attributed to the real demand. There is a speculative element about iron pipe at the present time. It is quite generally believed that the present low prices will not hold long, and a number of dealers are buying that they may have a good stock on hand when the expected rise comes.

Enamelware.—Of late the retail sales in this line have been of Christmas specialties. It has, therefore, been this class of goods which the manufacturies have been sending out in largest numbers. But the call for bathroom fixtures, sinks, and such goods has not by any means entirely died out. Indeed the orders have continued so heavy, that only now are the factories able to replace the samples taken out of the show rooms to meet the heavy fall demand.

Lead Pipe.—The mild weather has had something to do with keeping up the demand for this line. It has been possible to do outside work until the last few days, and many have taken advantage of this. There seems to be a general desire among manufacturers to get their plants in perfect shape before the heavy production of next year commences. So orders for all kinds of pipe needed to make the changes determined upon have been coming to the producers.

Soil Pipe.—“We expected this would be a quiet season,” remarked the manager of one large concern. “It has been quiet too, compared with the rush

experienced in November, but the demand has been so heavy that it has been impossible for us to close down our plant between Christmas and New Year's, as has been the custom for years. We are not going to be able to fix shorter working hours for the winter either. In the past we have started work at 8 and stop at 4.30, a good deal of lighting expense thus being saved. But to meet the steady call, and to get a stock on hand for next spring, we must keep going full blast all winter.”

The moderate weather, it is said, has also proved of benefit to those producing soil pipe. It has enabled the laying of this.

Iron Pipe and Fittings.—All through the fall a scarcity of iron pipe has been experienced. Now the supply has become more adequate, but with this satisfactory condition has come a drop in prices which is again so stimulating orders that the producers are not able to do much more than meet the immediate demand.

A good part of the present buying is speculative. The low prices have been brought about by strong competition from the States. There a better state of things seems about to materialize. Prices, therefore, will likely advance, and there will come a corresponding advance in Canada. So this is being hailed as a good season to lay in a stock.

The prices being asked at present are:—

Black Pipe		Galvanized Pipe
\$ 1.80	¼ inch	\$ 2.57
1.80	⅜ inch	2.57
2.35	½ inch	3.23
2.75	¾ inch	3.83
3.93	1 inch	5.48
5.35	1¼ inch	7.49
6.44	1½ inch	8.98
8.05	2 inch	11.46
12.85	2½ inch	18.30
16.86	3 inch	24.03
22.57	3½ inch	33.65
25.65	4 inch	35.90

Solder.—Still there is a good demand for this, since the usual repairing work is going on.

## TORONTO.

Toronto, December 28.—The year that has passed has been one of the best ever experienced in the heating and sanitary trades. From first to last conditions have been brisk, although during a few seasons a tendency was noted for business to lag. This was invariably temporary, however, and the amount of business done at other times served to swell the year's total to record breaking proportions. From late summer on, the tide of trade activity has been unchecked.

“The best year we have ever had,” was the way one supply man sums it up. “We can't say for certain yet, but I guess we have broken the record,” was the statement of another. Others assert that they never remember a better year. In point of volume, at least, 1911 was about the busiest year that the trades have seen.

So active did conditions become that there were shortages in many lines during the fall. Galvanized pipe in ¼ inch sizes was hard to obtain and a scarcity of soil pipe developed. In fact, at some stages, it was practically impossible to obtain soil pipe. Around the first of November, it was particularly hard to get soil pipe, orders then being booked far in excess of the visible supply. During the fall months it was found extremely difficult also to get certain lines of enamelware. The sales of enamelware were heavy and the manufacturers were kept busy supplying the demand.

The large volume of business is due primarily to the heavy building done during the year. So many new buildings were put up that the plumbing in that way alone was sufficient to insure prosperity.

If conditions in the sanitary trade reflected prosperity and extreme activity, an even greater activity was shown in the heating trade. Manufacturers of boilers and radiators were kept busy at all stages of the season meeting the demand. “Our best year by a fair margin,” is the comment of one boiler man. “We have sold about thirty per cent. more boilers than during our previous best year,” states another manufacturer. No actual shortage developed but there were many occasion during the late summer and fall when it was difficult to obtain supplies to fill all orders. Radiators were hard to obtain at certain stages also.

Prices during the year have not fluctuated unduly, although quite a few changes have been made. Solder has been high, as a result of the steady increase in the price of tin. Lead pipe has also been boosted owing to the rapid raise in the price of pig lead.

The latest development in this respect has been the changed scale on black and galvanized iron pipe. The new scale will be found in the Montreal market report on this page.

Metals.—The metal situation has shown a steady improvement during the year, culminating in a very satisfactory condition at this time. This improvement has been effected in the face of depressing conditions on the other side of the line. Prospects for the future are now deemed of the brightest.



## PLUMBING SUPPLIES

National Lowdown Closets  
Imperial Lowdown Closets  
Enamel Lavatories  
Enamel Sinks  
Galvanized Boilers  
Enamel Baths  
Plumbers' Brass Work

Gas Fittings  
Malleable Fittings  
Cast Iron Fittings  
Soil Pipe  
Soil Pipe Fittings  
Black and Galvanized Pipe  
Tools, Etc.

**The National Plumbing Supply Company, Limited, 115-117-119 Adelaide Street West  
TORONTO, ONTARIO**



Hot Water Quick Opening Radiator Valve.

### "Miller" Hot Water and Steam Radiator Valves

The bodies and bonnets of our **Hot Water Quick Opening Radiator Valves** are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior **Steam Radiator Valves** have very low seats and a high lift of Disc.

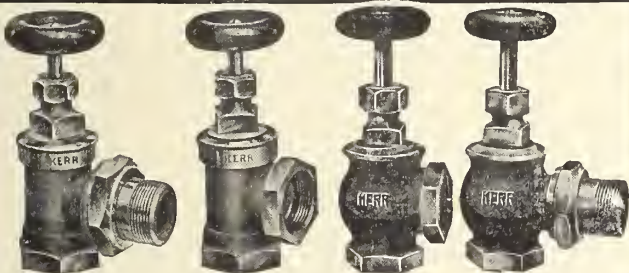
We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.

**MILLER LIMITED, - LONDON, CAN.**



Steam Radiator Valve.



## KERR

### Steam and Hot Water RADIATOR VALVES

are past the experimental stage.

They set the standard for high quality in material and finish and stand the many tests of use.

Note the seats in Kerr's New Pattern J.D. Radiator Valves which insure perfect drainage.

**The Kerr Engine Co., Ltd.**

VALVE SPECIALISTS

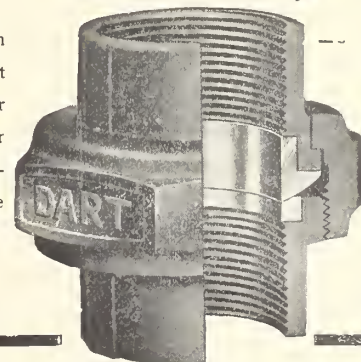
Walkerville - - Ontario

## DART

### "The Union That Never Leaks or Corrodes"

Can be connected time after time without impairing its efficiency. Will stay perfectly tight until deliberately loosened.

The Dart Union makes a joint quickly whether pipes are in or out of line, saving much time and money.



Made in all convenient types, flanged elbow, tees, etc., male or female. Every one guaranteed. Get them from your jobber.

**DART UNION CO., Ltd., TORONTO**



## Condensed or "Want" Ads.

### BUSINESS CHANCES.

**FOR SALE**—Good plumbing, heating and tin-smithing business in flourishing town of 15,000 in Western Ontario. Established 20 years. Box 607, PLUMBER AND STEAMFITTER, Toronto. (3)

**FOR SALE**—A first-class tin-smith, plumbing and heating business in a flourishing city. Shop well equipped with all kinds of tools; also stove business in connection. A snap if sold at once. Box 619, PLUMBER AND STEAMFITTER, Toronto. (1)

### SITUATION VACANT.

**WHOLESALE** jobbers in Plumbing and Steam-fitting goods in Western Canada have vacancy for 3 first-class travellers. Must be able to draw plans and take off material. Applications must contain full particulars re experience, references and salary expected. All applications treated confidentially. Apply Box 613, PLUMBER AND STEAMFITTER, Toronto. (1)

### MISCELLANEOUS.

**ADDING TYPEWRITERS** write, add or subtract in one operation. Elliott Fisher, Limited, Room 314, Stair Building, Toronto.

**BUSINESS-GETTING** Typewritten Letters and real printing can be quickly and easily turned out by the Multigraph in your own office—actual typewriting for letter-forms, real printing for stationery and advertising, saving 25% to 75% of average annual printing cost. AMERICAN MULTIGRAPH SALES CO., Limited, 129 Bay St., Toronto.

**COPELAND-CHATTERSON SYSTEMS**—Short, simple. Adapted to all classes of business. The Copeland-Chatterson Company, Limited, Toronto and Ottawa. (1f)

**COUNTER CHECK BOOKS**.—Write us to-day for samples. We are manufacturers of the famous Surety Non-Smut Duplicating and Triplicating Counter Check Books and Single Carbon Pads in all varieties. Dominion Register Co., Ltd., Toronto.

**COUNTER CHECK BOOKS**—Especially made for the plumbing and steamfitting trade. Not made by a trust. Send 10 samples of what you are using—we'll send you right prices. Our holder with patent carbon attachment has no equal on the market. Supplies for binders and monthly account systems. Business Systems, Limited, Manufacturing Stationers, Toronto.

**DOUBLE** your floor space. An Otis-Fensom hand-power elevator will double your floor space, enable you to use that upper floor either as stock room or as extra selling space, at the same time increasing space on your ground floor. Costs only \$70. Write for catalogue "B." The Otis-Fensom Elevator Co., Traders Bank Building, Toronto. (1f)

**EGRY BUSINESS SYSTEMS** are devised to suit every department of every business. They are labor and time savers. Produce results up to the requirements of merchants and manufacturers. Inquire from our nearest office. Egray Register Co., Dayton, Ohio; 123 Bay St., Toronto; 258½ Portage Ave., Winnipeg; 308 Richards St., Vancouver.

**FIRE INSURANCE. INSURE IN THE HARTFORD.** Agencies everywhere in Canada. (1f)

**FROM NOW TILL THE END OF THE YEAR** we offer unusually good bargains in second-hand Typewriters. They are carefully rebuilt, work and look like new, but the price is a mere fraction of the original cost. Write for catalogue. THE MONARCH TYPEWRITER CO., Limited, 46 Adelaide Street West, Toronto, Ont.

**KAY'S FURNITURE CATALOGUE** No. 306 contains 160 pages of fine half-tone engravings of newest designs in Carpets, Rugs, Furniture, Draperies, Wall Papers and Pottery with cash prices. Write for a copy—it's free. John Kay Company, Limited, 36 King St. West, Toronto.

**MOORE'S Non-Leakable Fountain Pens.** If you have fountain pen troubles of your own, the best remedy is to go to your stationer and purchase from him a Moore's Non-Leakable Fountain Pen. This is the one pen that gives universal satisfaction and it costs no more than you pay for one not as good. Price \$2.50 and upwards. W. J. GAGE & CO., Ltd., Toronto, Sole Agents for Canada.

**MODERN FIREPROOF CONSTRUCTION.** Our system of reinforced concrete work, as successfully used in many of Canada's largest buildings, gives better results at lower cost. "A strong statement" you will say. Write us and let us prove our claims. That's fair. Leach Concrete Co., Limited, 100 King St. West, Toronto.

**PENS**—The very best Pens made are those manufactured by William Mitchell Pens, Limited, London, England. W. J. Gage & Co., Limited, Toronto, are sole agents for Canada. Ask your stationer for a 25c. assorted box of Mitchell's Pens and find the pen to suit you.

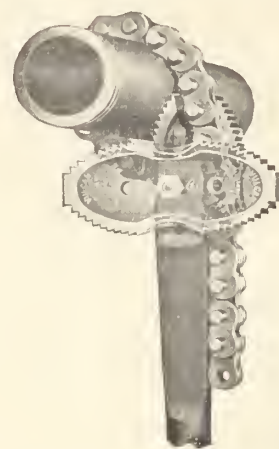
**THE "Kalamazoo" Loose Leaf Binder** is the only binder that will hold just as many sheets as you actually require and no more. The back is flexible, writing surface flat, alignment perfect. It cannot get out of order. No exposed metal parts or complicated mechanism. Write for booklet. Warwick Bros. & Rutter, Ltd., King and Spadina, Toronto.

**WAREHOUSE AND FACTORY HEATING SYSTEMS.** Taylor-Forbes Company, Limited. Supplied by the trade throughout Canada.

**YOU** don't buy a National Cash Register—it pays for itself. Saves money. Prevents mistakes. We can prove it. National Cash Register Co., 285 Yonge Street, Toronto.

**ONE** of the most successful retailers of late years says: "When a firm advertises in trade papers it is getting into good company. As I pick up one of a dozen of these periodicals here in my office, and glance through it, I find that the best people, the successful firms, are represented in such a way as to reflect their importance in the trade."

Keep in mind the dominant fact that mankind from its first appearance on the earth has been schooled by nature to look for signs; for invitations to taste; for suggestions as to what to wear. Tell your story briefly, forcibly, truthfully, and address it through the proper media and you can successfully apply advertising as a means to increased distribution.



## Improved "Vulcan"

(Bijaw Pattern)

### CHAIN PIPE TOOLS ARE SAFE

Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. The use of Vanadium Steel parts in the Vulcan Chain Pipe Wrenches not only gives a decided increase of strength, but a larger factor of safety that is ample protection to the operator.

American Vanadium Facts

That they may command your full confidence and give you superior service in chain pipe tool work, nothing meaning "better goods" will be left undone.

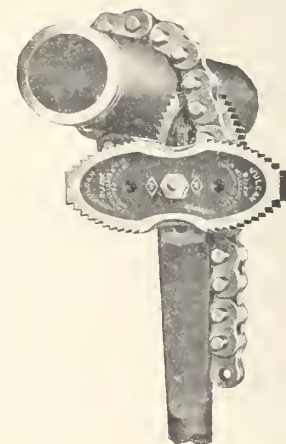
**SERVICE OF TWO.  
PRICE OF ONE.**

**J. H. Williams & Co.**

77 RICHARDS ST.

Superior Drop Forge

BROOKLYN, - NEW YORK



# DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Steamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

## EMERY WHEELS.



### Canadian Hart Wheels

442 Barton St. East, Hamilton

Corundum and Emery Wheels  
Grinding Machines, Beaver  
Oil Stones.

## SHELF BRACKETS.



### Will Hold Up a Shelf

That's what a shelf bracket's for  
For this purpose there can be  
NOTHING BETTER, NOTHING  
CHEAPER than the BRADLEY STEEL  
BRACKET. It is well Japanned, Strong and  
Light. The saving on freight is a good profit  
aside from the lower price at which the goods  
are sold. Order direct or through your jobber.

ATLAS MFG. CO., NEW HAVEN



THIS IS THE DAY OF

## INVESTIGATION

Get in line and let us prove  
to you that the

GENUINE

Armstrong Stocks and Dies

ARE THE BEST.

Catalogue on request.



Armstrong Mfg. Co.

317 Knowlton St.  
Bridgeport, Conn.

## FILTERS.

### Anti-Splash Tap Filters

The "Galvo" Filter and Water Steriliser  
"Perfection" Fire Extinguishers

There's good money in them for hardware dealers.

Write for Prices.

The Anti-Splash Filter Co.

OWEN SOUND - - - ONTARIO

Are you interested in any of the  
lines that are advertised?

A Post Card will bring you price  
list and full information

Don't forget to mention this  
paper

## MANUFACTURERS' AGENTS.

### Western Distributors, Limited CUSTOMS BROKERS

Wholesale Commission Merchants and Manu-  
facturers' Agents. Cars Distributed. Warehoused  
and Forwarded. Warehouse on Trans-  
fer Track. Business solicited.

OUR POSITION IS YOUR OPPORTUNITY  
SASKATOON, WESTERN CANADA

## BRONZE POWDERS

## BRONZE LIQUIDS

The

### Canadian Bronze Powder Works

Montreal Toronto

Works, Valleyfield

Send us your orders and we guarantee the  
quality

## LEAD PIPE LEAD WASTE



LEAD PIPE  
ANY SIZE

BLOCK TIN PIPE

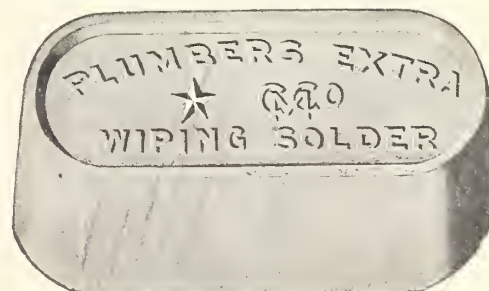
The Canada Metal Co., Ltd.

TORONTO

## WE MANUFACTURE FOR THE PLUMBER

Lead Pipe Lead Waste  
Hydraulic Drawn Traps  
Non-Syphon Centrifugal Cast  
Trap (Ask for Cut or Price)  
Strictly Bar Solder  
Star Extra Wiping (Best on Earth)  
Easy Wiping Solder  
Acme Wiping  
Brass Ferrules (Select) Tinned  
Iron and Lead Combination  
Ferrule Bends or Spun End Test  
Sheet Lead Lead Fibre

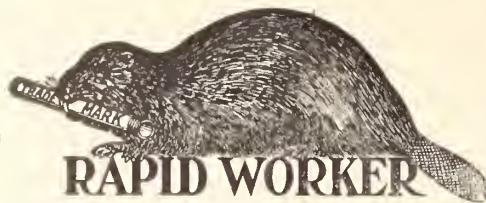
Plumbers' EXTRA STAR Wiping Solder,



The Solder with the tin in.

Western Factory : WINNIPEG



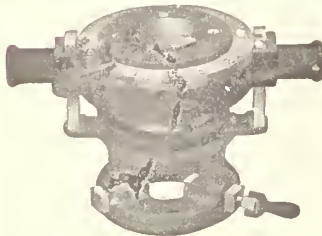


## RAPID WORKER

*One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.*

# "Beaver" Adjustable Die Stocks

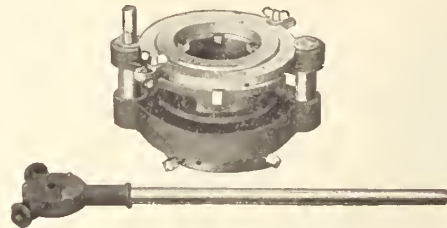
HAVE cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts, and eliminate all of thread-stripping when backing off.



No. 25A, threading 1, 1¼, 1½, 2-inch pipe.  
A boy can operate it.



No. 6, threading ¼, ½, ¾ inch, complete.



No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in. the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

No loose Bushings or loose Dies on No 25A and No 6, and they cut 1, 1¼, 1½ and 2-inch pipes.  
We can furnish a separate set of dies for 1, 1¼, 1½ and 2-inch pipe.

Write us for Illustrated Price Lists.

**BORDEN CANADIAN COMPANY,**  
66 Richmond Street East Toronto, Ontario

**N**OW that 1911 has drawn to a close, and the New Year is at hand, we wish to acknowledge our appreciation to our customers for their many favors during the year which is spent.

We shall endeavor to give the same courteous treatment in the future as in the past, and wish you a very Happy and Prosperous New Year.

**The Wallaceburg Brass & Iron Mfg. Co., Limited**

Ontario Representative: L. N. VANSTONE, 8-10 Wellington St. East, Toronto  
Eastern Representatives: JOS. R. MARTIN & CO., Board of Trade Bldg., Montreal  
Western Representatives: MONCRIEFF & ENDRESS, Scott Building, Winnipeg

## Use the Long Distance Phone

To order any supplies you may need in a special hurry.

You see, we have been a hundred years perfecting our facilities and we can give you unrivalled service. Under the name of

## “SCOTIA” PLUMBING SUPPLIES

We sell all the leading lines of Plumbers' Supplies made in the world.

Big stocks always on hand—prompt shipment made—prices as low as good quality permits.

**Wm. Stairs, Sons & Morrow, Limited**

ESTABLISHED A.D. 1810

Halifax - - - Nova Scotia



## Take Your Stand

on the side of efficiency and reasonable cost by recommending and installing the

## SOVEREIGN MONARCH RADIATOR

No modern radiator has so many points in its favor. Here are a few of them:—It will save labor, lessen cost of household repairs, and minimize insurance premiums. It will increase the value of the property in which it is installed from 10 to 15%, and will minimize housecleaning by doing away with all dust and ashes. Send for booklet and full particulars.

The arguments in favor of handling the “Sovereign Monarch” cannot fail to convince you.

**Taylor-Forbes Co., Limited,** Head Office and Works: **Guelph, Ont.**

TORONTO: 1088 King St. W. Taylor-Forbes Co., Ltd., 246 Craig St. W., Montreal, Que.  
Taylor-Forbes Co., Ltd., 1070 Homer St., Vancouver, B.C. W. R. Mathers, 46 Princess  
St., St. John, N.B. The Vulcan Iron Works, Winnipeg, Man. The Mechanics Supply  
Co., Quebec, Que.





For most of us, Father Time makes the years roll by too fast in this busy world. May it be that you have benefited in many ways by another year added to your experience, and may the New Year bring you increased success and happiness.

We wish to thank our many patrons for their favors extended to us during the year 1911, and solicit a continuance of their patronage.



**The James Morrison Brass Mfg. Co., Ltd.**  
**TORONTO, ONTARIO**



**No Chance For Kicks**  
**"EMPIRE"**  
**CLOSETS**

**ARE TESTED  
BEFORE LEAVING  
FACTORY**

**GUARANTEED  
SATISFACTION**

**EMPIRE MFG. CO., Ltd.**  
**LONDON, ONT.**



# PLUMBER & STEAMFITTER

*and Sanitary Engineer of Canada*

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

MONTREAL, 701-702 Eastern Townships Bank Bldg.  
LONDON, ENG., 88 Fleet St. E.C.

TORONTO, 143-149 University Ave.  
CHICAGO, 140 S. Dearborn St.

WINNIPEG, 34 Royal Bank Building  
NEW YORK, 115 Broadway

Vol. VI.

Publication Office : TORONTO, JAN. 15, 1912.

No. 2



THE  
**STANDARD**  
COMPANY LIMITED  
GENERAL OFFICES AND FACTORIES · PORT HOPE · CANADA

**“Artistic Sanitation In The Home”**



Is the title of a very handsome booklet we have just issued on Standard IDEAL Ware—To read it will make you better acquainted with the merits of this artistic and absolutely sanitary product—It gives many practical suggestions on bathroom furnishing and much information on the processes of manufacture which obtain in the Largest Exclusive Cast Iron Porcelain Enamelling Sanitary Works under the British Flag.

**Let us have your name to-day  
for a copy of it**

BRANCH OFFICES AND SHOWROOMS

<b>TORONTO</b> 119 KING STREET EAST	<b>MONTREAL</b> 42-44 BEAVER HALL HILL	<b>WINNIPEG</b> 76 82 LOMBARD ST
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# Beaver Brand

## Cast Iron Enameled Ware

Unsurpassed for Pure Whiteness of Color,  
Attractiveness of Design, Finish and Durability.



The above cut shows one of our NEW ROLL RIM,  
HIGH BACK SINKS with Improved Outlet and Large  
Patent Nickel-plated Strainer, with Roll Rim, High  
Back, Right and Left Drain Boards.

This is another of our new Fixtures that is meeting with  
great favour from buyers who want the best, and insist  
on BEAVER BRAND GOODS.

## Amherst Foundry Co., Limited

General Offices and Factory: Amherst, Nova Scotia

ONTARIO:  
Monarch Brass Mfg. Co.,  
178 Victoria St., Toronto

MANITOBA and NORTHWEST:  
E. B. Plewes,  
120 Lombard St., Winnipeg

BRITISH COLUMBIA:  
A. O. Campbell,  
550 Beatty St., Vancouver

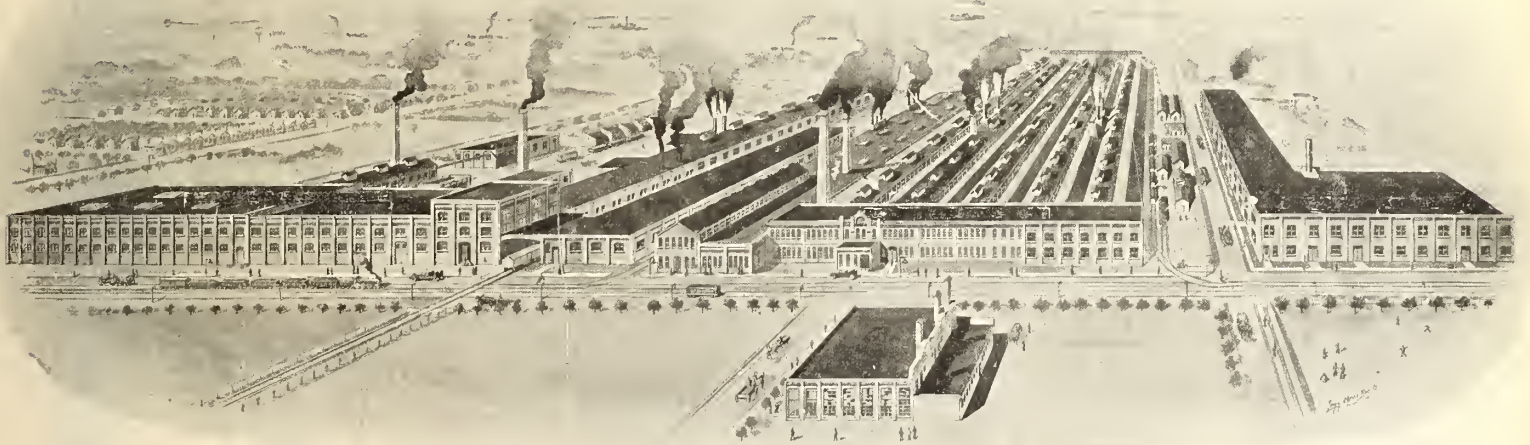
# The Honeywell System of Hot Water Heating

is specified by leading architects; installed by most progressive steamfitters and insisted on by discriminating builders and proprietors. This condition is the logical tribute paid to a thoroughly efficient, well reasoned system.

**The Honeywell Heating Specialty Company**  
WABASH, IND.

Frank T. Rawley,  
Canadian Manager

Room 1008 Eastern Townships Bank Bldg., Montreal.  
Phone Main 4615



## Malleable and Cast-Iron Pipe Fittings

MANUFACTURED BY

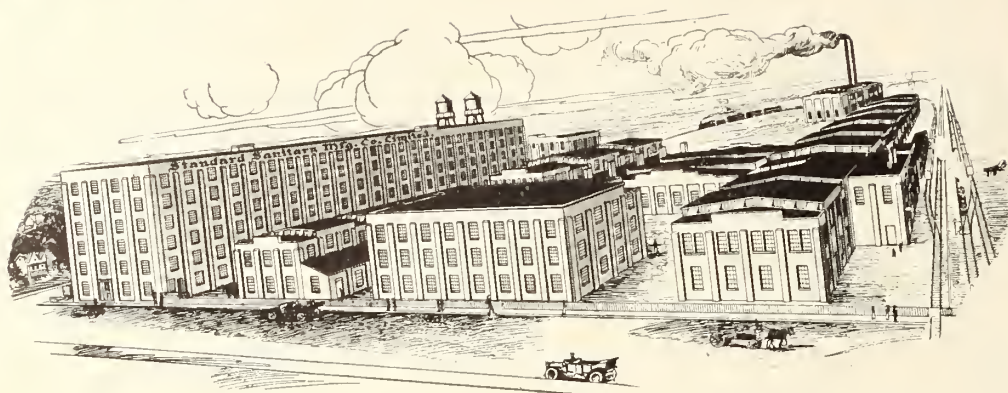


**FITTINGS LIMITED**

OSHAWA - WINNIPEG - MONTREAL







Canadian Factory Erected at a Cost of  
a Million Dollars for the production of

# Standard Sanitary PLUMBING FIXTURES

BEFORE the establishment of a "Standard Sanitary" Factory in Canada, "Standard Sanitary" Plumbing Fixtures were so highly esteemed by the Canadian public that they attained a large sale, notwithstanding the handicap of added duty-cost and delayed delivery. Now that such difficulties have been removed by the building of a Canadian plant, both trade and public are showing prompt appreciation of the fact that they are thus enabled to obtain "Standard Sanitary" Plumbing Fixtures on the same satisfactory basis as those in the United States.

Toronto  
Store  
59-61  
Richmond  
Street  
East

**Standard Sanitary Mfg. Co.**  
Limited

Head Office and Factory for Canada:  
Cor. Royce and Lansdowne Ave., Toronto

Hamilton  
Store  
20-28  
Jackson  
Street  
West



I'm  
Nye  
the  
Die  
Man



## There's Only One SKIP TOOTH DIE

It was the earliest product of the Nye plant and from the very first has sustained a reputation for unapproachable merit. This celebrated die is made by past masters in the art of tempering. Every phase of the delicate hardening process has received their zealous study.

To this experienced talent has recently been added exclusive mechanical appliances for determining, with scientific exactness, the heat each die is receiving. Specially constructed tempering furnaces are used instead of the old "hot lead process" in the Nye plant. There's no trusting to "luck" and "good guessing" where skip tooth dies are made.



Fits Any Solid Stock

The material used in the Nye die matches its excellence of design and workmanship. Jessop's world-famed tool steel, the highest priced material of its kind on the market, furnishes the basic strength of this marvelously tough tool.

### TRY THE NYE SOLID DIE

It has no equal for accuracy, ease of cutting and durability. If it does not give more satisfaction than any die you have ever used, send it back. Sold the "Nye Way." FREE TRIAL.

NYE, THE DIE MAN

The Nye Tool and Machine Works, 130 North Jefferson St., Chicago, Illinois

# WROUGHT PIPE

BLACK and GALVANIZED. SIZES, 1/8 IN. TO 4 IN.

All our pipe thoroughly inspected, tested to 600 lbs. hydraulic pressure and branded.

Ask your jobber for



Brand

## CANADIAN TUBE & IRON CO., LIMITED

Montreal

Works: Lachine Canal

**WE  
WANT  
A  
MAN**

of good character, in each city, town and village in Canada, where we are not already represented, to act as our

### SPECIAL CIRCULATION REPRESENTATIVE.

Work is dignified and educative. Previous experience unnecessary. Duties at first need not interfere with your present employment.

**WE WILL ASSIST THE RIGHT MAN TO BECOME INDEPENDENT FOR LIFE.**

If you are making less than \$100.00 a month, and are trustworthy and ambitious to learn and become competent to handle our business in your vicinity, write us at once for full particulars.

MACLEAN PUBLISHING COMPANY,  
143-149 University Ave., Toronto, Ont.

# TWO CENTS PER WORD

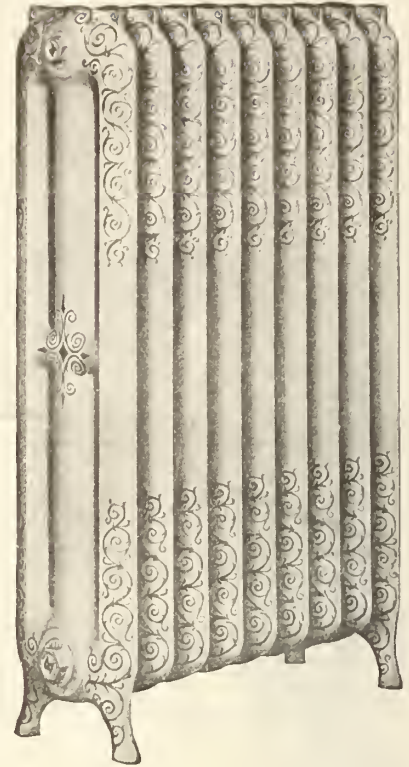
You can talk across the continent for two cents per word with a WANT AD. in this paper.





# "KING"

## BOILERS AND RADIATION



PROMPTLY SHIPPED

UNCONDITIONALLY  
GUARANTEED

EXTENSIVELY  
ADVERTISED

EASILY INSTALLED—  
Because Accurately Made.

## Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers---in fact, too prosperous in some respects for our own and our customers' good---we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

# STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

Showrooms, 80 Adelaide St. E.

MONTREAL  
138 Craig St. W.

# Plumber and Steamfitter

## and Sanitary Engineer of Canada

Published on the 1st and 15th of each month by

THE MACLEAN PUBLISHING COMPANY, LIMITED

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, JANUARY 15, 1912

MONTREAL'S BOARD OF CONTROL has recommended, and the council has approved, that the tax of one dollar, imposed upon baths used in houses which rent for \$150 a year or more be discontinued. But hold! This

### ENCOURAGING CLEANLINESS BY REMOVING TAX

is not quite correct. The tax is to be removed from private houses, but is to be retained as regards hotels and apartment houses.

Why this discrimination is made against the hotels and apartment houses will remain one of the unsolved mysteries. Surely those living in these places are in the same need of baths; and while it may be that the dollar tax is small in comparison with the value of these places, yet it is a tax just the same.

Last year the city of Montreal derived a \$23,000 revenue from this tax on baths. It is a small revenue at that. Think of it, 23,000 baths to wash two-thirds of Montreal's 500,000 inhabitants. That is surely a fair estimate, for fully two-thirds of those in the Royal City live in houses which rent for \$150 a year or more. Only 23,000 baths to wash 330,000 people. Fourteen to a bath. There surely must be some waiting of a Saturday night. No wonder the controllers have decided to remove the tax and encourage the installation of baths. No wonder that the aldermen who so carefully guard the interest of the PEOPLE have supported the controllers' report.

The removal of this tax has a somewhat humorous side, yet it is quite likely to bring results which will cause the plumber to smile with pleasure instead of derision. There are many who will think more of installing extra baths since this impost has been cancelled. Some who would willingly pay \$50 for a bath will hesitate to do this when it necessitates their paying a dollar tax, which they regard as unjust. Such is human nature.

COMPLAINT IS loudly voiced by the Commercial Travelers' Association of Canada on the score of hotel accommodation, particularly in Ontario. It has been decided to send in a petition to the Ontario Government demanding that something be done

### TRAVELERS WANT BETTER ACCOMMODATION.

to bring hotel accommodation in all districts up to a certain standard. They are prepared for all contingencies. If the petition is disregarded, the commercial men will demand a Royal Commission to investigate hotel conditions, and may even go to the length of marching in a body to the Parliament Buildings to voice their claims.

The traveling man has full reason to complain on this score. The discomforts of life on the road can only be appreciated by one who has tried it. Damp beds, poorly ventilated rooms and insufficient, poorly-cooked meals are the traveler's almost daily portion. Not even in the largest of metropolitan hotels has it been found possible to give absolute satisfaction, but where it comes down to the average country hostelry, the kind of service given is indeed execrable. The traveling man frequently has to pay high rates for accommodation of the most meagre kind.

It is indeed time that something was done to insure comfort and health to that highly useful and necessary member of society, the traveling salesman. Just what steps should be taken would rest with the provincial authorities.

The man who installs a heating plant should do more than see this is in fine working order. If he is to perform his full duty he must explain to the master of the house the system upon which the furnace is run; and he must caution him against making such alterations as will spoil its effectiveness.

### EXPLAINING IS ENGINEER'S DUTY

The simple mistakes that are made, whereby the efficiency of furnaces are being spoiled, show the necessity of this care on the part of the heating engineer. It is to his interest to see that nothing makes the work which he has done appear faulty.

Of course, even when warned, some there are who will tamper with the furnace in such a way that it will be rendered inefficient. But in this case the heating expert will be able to say: "I told you so." There are occasions when this hateful phrase is quite justifiable.

ON TO CALGARY is now the slogan.

CONCENTRATION is the father of efficiency.

THOSE EDISON STOVES, which will give out cold aid instead of warm, should sell well in a place we have heard much of, but hope never to see.

THE COMMERCIAL travelers may march en masse to Queen's Park to demand that better hotel accommodation is provided. This is borrowing a leaf from the book of the suffragettes.



# Plans are Laid for 1912 National Convention

The Following Article is by F. A. McVeigh, Secretary of the Calgary Association of Sanitary and Heating Engineers—He Tells of the Preparations Already Under Way for the Holding of a Banner Convention—Reason for Dates Set Explained—Manufacturers Exhibit to be Conducted.

By F. A. McVeigh.

Calgary, January 4.—The Seventeenth Annual Convention of the Canadian Society of Sanitary and Heating Engineers (or should it be the First) will be held in Calgary this year.

The Calgary Association of Sanitary and Heating Engineers, who will, of course have the Convention arrangements in hand, have after long deliberation and weighing of the matter, submitted the dates for the Convention to the Executive of the National body for its approval and sanction.

The dates decided upon by the Calgarians are July 18 to 25, inclusive, and it is to be hoped that every Sanitary and Heating Engineer in this broad Dominion will keep these dates in mind, and try to the very best of his ability to arrange his business so that he can attend and assist in making this the banner convention of the crafts throughout Canada.

It is, perhaps, too much to expect that every Master in the Dominion will be present, but it certainly is not too much to expect that at least every district in the Dominion will have one representative or more in attendance.

## A Red Letter Meeting.

The last Convention was a red letter one, and the results of that meeting are as yet only shaping themselves; but when these results are fully rounded out, it will be found that the Sanitary and Heating Engineers of Canada, will reap benefits that they only dreamed of heretofore.

The wave of organization that is passing over the country at the present time is one of the results of these Annual Conventions, and this alone is of such great importance to the welfare of the Master Plumber or Fitter, that even if no other results were attained, this one fact will have made the National Convention a thing to be looked upon by the Sanitary and Heating Engineer as an unmixed blessing.

## The Advertising Campaign.

The Calgary A.S. & H. E. has embarked upon a campaign of advertising and publicity among the members of the craft in Canada and also among the manufacturers and supply men, and intend making this campaign a very far-reaching one. They have sent lists of



F. A. McVEIGH.

the Master Plumbers, etc., in each Province to the Provincial Vice-Presidents, with a request that they check same, cutting out such names as are no longer connected with the trades and adding such new names as may have started in the business. Every Sanitary and Heating Engineer on these lists will receive a personal invitation to attend the Convention, and be asked that if they cannot attend themselves, to use all their efforts to see that the district in which they carry on business is represented by at least one delegate.

If the members of our craft will only awaken to the fact that in united action lies the future of the Sanitary and Heating business of the Dominion, and that

this future can be shaped by the Masters themselves; the result will be a record attendance at this Convention, and a gigantic step forward upon the path that we are all treading.

## Goal is in Sight.

The goal is in sight, but what form that goal will take when we get there, depends entirely upon the Sanitary and Heating Engineers themselves, and it behooves us all to take counsel with our fellow members of the craft at times in order that we may outline the necessary course of action to reach the desired result.

These national conventions have always been the medium whereby the Sanitary and Heating Engineers could base a certain line of action, and without such conventions it is next to impossible for and cohesion in our business. It is absolutely necessary for the welfare of the craft that the members thereof should be able to meet and discuss matters that vitally affect themselves and their business, and there is not a man living who cannot be benefitted more or less by proper discussion and the comparing of notes with his fellow craftsmen.

Therefore, we would urge on each and every Sanitary and Heating Engineer in this broad Dominion, the necessity of taking an intelligent interest in the National Convention; for we can truthfully



E. L. Martin, one of Calgary's progressive sanitary and heating engineers out for an evening spin in his car, with his family and a party of friends. In the distance can be seen one of the great trains of wheat that are a common sight in the Calgary district.



View of a Calgary Showroom—This Gives Only a Partial View of the Interior of the E. J. Young Co. Establishment.

say that the benefits derived will surprise him, not only from a broad National point of view, but also in his own business.

#### Reason for Dates Set.

On looking at the calendar, readers will notice that the dates set by the Calgary A.S. & H. E. are a trifle different from the ordinary run of the Conventions, in that the meetings start on a Thursday and end on a Thursday. In nearly every instance formerly, the Conventions have started on a Monday, and continued throughout the week, but in this case they will start in the middle of a week and end in the middle of the following week. The reason for this is explained as follows: The expectations are that there will be a very large attendance from the Eastern Provinces, and by having the Convention start at the time mentioned it will be found that the eastern delegates can leave around Sunday and arrive in time for the meetings, and at the conclusion can reach home in time to start a new week. This means that in the majority of cases no member will be forced to leave home in the middle of a week and get back in the middle of another.

Another reason for these dates is that many of the delegates will very prob-

ably wish to take advantage of their being in the West, to see as much as possible, and while Calgary itself is a City of the Plains, still it is placed in such a position that it is within very easy touch with all the different phases of western life. Within a short run there is Edmonton, the Provincial Capital, where the Sanitary and Heating Engineers have

#### ATTEND CONVENTION.

The 1912 National Convention to be held at Calgary will be the greatest in the history of the craft in Canada. With the impetus supplied by the splendid gathering of last year, even greater results should be obtained at Calgary. Nevertheless, members of the craft in all parts of the country should pay to Mr. McVeigh's appeal for a representative attendance. To achieve a full measure of success, it will be necessary to have delegates present from every part of the country. The present is not too early to make arrangements to attend.—Editor.

an Association, and which is well worth seeing as it is the gateway for all the great northern country, the Peace River district and etc. On the east, Medicine Hat stands, the heart of probably one of the most famous natural gas districts in the world.

South is Lethbridge, one of the most progressive towns in the West, and the centre of a gigantic coal mining country, and just west are the mountains, the famous Rockies with all their magnitude and awe inspiring grandeur. The Rockies are visible very plainly from Calgary, and a couple of hours run on the train will land you in the heart of them, where nature can be seen in all its glory.

Banff, the great national park and playground, is only a short distance from Calgary, and the delegate who misses the chance to see this great resort will regret it ever after.

The setting of the convention dates as they are, will give the delegates attending a chance to take in any of the points of interest around Calgary, to say nothing of the welcome break in the middle of what is hoped to be a very strenuous convention.

#### To Hold Exhibition.

Another matter that the Calgary Association is taking up very strongly, is



the holding of an exhibition of Sanitary and Heating goods together with all the necessary adjuncts to these lines—and a letter has been sent to most of the manufacturers and supply men telling them some of the aims of the National Association, and requesting them to co-operate by taking advantage of the opportunity of displaying the lines that they specialize in. It is hoped that the exhibits will be very many and varied, and the attention of the manufacturers is called to this letter, a copy of which will appear in an early issue. Any manufacturer who may have failed to receive one of these letters and who is desirous of exhibiting his line of goods, has only to get into communication with the Secretary of the Calgary Association of Sanitary and Heating Engineers, when all information will be at once forwarded to him, and every assistance possible given.

Now that the Convention is started, it

is up to the members of the craft through the Dominion to see that it is a success, and by no other way can they help so much as by making up their minds that **they** are going to be present. The time set is one of the best in the year, as everyone will be over the spring rush, and not as yet into the fall rush. Therefore, there is no real excuse in most cases for non-attendance, and the man who can attend and does not, is a man who is not on the lookout for ways of bettering himself in the business that he has made his life work.

**DON'T FORGET THE DATES, JULY 18 TO 25 INCLUSIVE. COME AND SEE THE GREAT WHEAT COUNTRY—SEE THE ROCKIES—GET IN TOUCH WITH YOUR FELLOW CRAFTSMEN—HELP TO BUILD UP YOUR BUSINESS—AND THE WAY TO DO ALL THIS IS GO TO THE CONVENTION.**

## Campaign of the Twin Cities Association

**New Rooms Have Been Secured for the Use of the Members—  
A Library of Technical Books to be Secured—Representation  
is Being Sought on All Public Boards—J. Marshall Elected to  
Council.**

(By J. W. Barnes.)

**I**T has been resolved by the Domestic Sanitary and Heating Engineers of Port Arthur and the Twin Cities, that they would do everything in their power during the year 1912 to elevate and put their trade on a standard and at a height where it should be throughout our entire country and at the head of all other trades.

Our first move along these lines was the election of J. Marshall, of Marshall & Co., as alderman in our City Council. This is our first step and one that I think you will agree with me, is in the right direction, and I think we did the citizens of Port Arthur a good turn when we got Mr. Marshall to stand for this position. I do not believe there is a more conscientious and hard working man nor one who has the interest of the city more at heart than Mr. Marshall.

Our next move is to try and secure at least one or two representatives on the Board of Health and also a representative on the Board of Education. We fully believe, after careful consideration and thought, that the only way to elevate our trade and put it on its proper basis, is by getting the proper measures put through by our city officials and when we ask the city officials to put through measures for us to help us to elevate our business we have a right to share the responsibility.

### Representatives on All Boards.

We have agreed among ourselves this year, that we will be represented on every possible body that is working for the interest of our city, such as the Board of Trade, Commercial Club, Canadian Club, etc. I believe that, if a few more members in other cities would follow along the lines we are adopting for this year's campaign, the elevation of the Society of Domestic Sanitary Engineers would rise very rapidly. In a short time they would be considered amongst our best business men. Members to-day are inclined to try and keep themselves as far away from public opinion and public views as they possibly can.

We are going to keep you posted on all plumber and steamfitter doings during 1912. We have also asked our plumbing inspector to keep you advised on all moves that we make in the interests of plumbing in our city.

### Association's New Quarters.

We have just moved into our new quarters in the McCutcheon Block. We have four large rooms, with modern equipment and when we have it completely furnished, which we hope will be done in the course of the next two weeks we believe that we will have the finest quarters of any master plumbers' asso-

ciation in Canada. We extend a hearty invitation to sanitary and heating engineers, should they be passing through Port Arthur, to come and spend a day with us. We extend the same invitation to our trade paper and any of its representatives who may be in the city.

### Installing a Library.

We are having a library which will contain complete text books and will have some of the best works that are on the market to-day. These rooms can be used by any masters for figuring on large work. We also hope to transact all our business with the commercial men in these rooms. We believe, by adopting this plan, that it would be in the interest of the commercial men to be able to go down to a nice quiet room and go into whatever business they have to transact with any one of us. It will be much better than coming to our place of business, as there are so many interruptions and so many who always want the "Boss" and a commercial man will often spend two days trying to get a fifty dollar order out of some of us. In the case of figuring on large jobs. When we are in our own office and start to figure on a job, we are interrupted time and time again, which causes us to forget to figure on some things and makes us go over our work four or five times.

We, no doubt, will be adding a good many things to our rooms from time to time in the way of comfort and entertainment for our members and friends and we believe that if other associations would take the same steps, spend a few dollars in fixing up new quarters where a man can go and spend two or three hours in comfort that the attendance at the masters plumbers' meetings would be greater by fifty per cent. Every member of our association looks forward to Friday night. We have a good many special meetings but Friday night is the night which we all look forward to, as we transact a lot of business but always manage to spend one or two sociable hours before we go home.

I think I will have to close now and will wish you and your paper and all sanitary and heating engineers a happy and prosperous year.

### BRASS COMPANY INCORPORATED.

Articles of incorporation have been filed with the Secretary of State, by H. B. Wise, Inc., of Watertown, to deal in iron, copper and brass, and to manufacture furnaces, machinery and plumbers' supplies. The capital stock is \$400,000 and the directors are James B. Wise, Hattie C. Wise, Charles Ralph Wise and Lucien Mitchell, all of Watertown.

# Description of Installation in School Building

A description of a splendid school installation at Waterbury, Conn., is given in a recent issue of the Plumbers' Trade Journal. The sketches and material were secured through the courtesy of J. R. Walker, plumbing inspector of that place. The building in question was built about thirty-four years ago in a location about one and a half miles from the centre of the city.

At the time it was erected suitable outhouses were provided. These have been in use until the present time on account of the lack of proper supply and drainage. This has recently been extended to the property, and the opportunity to provide proper sanitary facilities have been quickly taken advantage of by the school department.

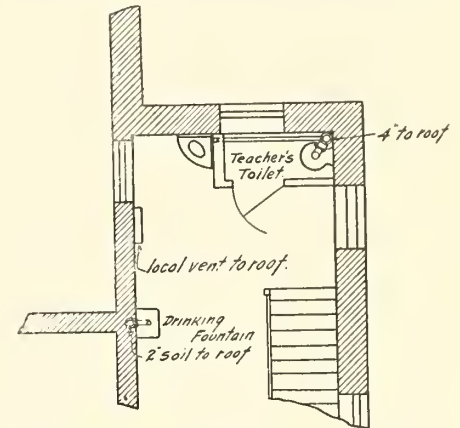
The specifications covering the work were as follows:

**Drainage.**—Run a 6-inch sewer from Hamilton Avenue and connect properly with 5-inch extra heavy soil pipe. Continue under basement floor to where closets are shown and reduce to 4-inch at second last closet and continue 4-inch through roof, leaving branches to receive discharge from teachers' closets, floor drain, urinal, etc., and where passing through roof flash with four-pound lead or heavy copper flashing. Connect the old 2-inch pipe with new sewer located near 6-inch iron column.

All joints and extra heavy soil pipes to be made with oakum and molten lead thoroughly caulked into hubs to insure perfect gas and water-tight joints. All connections to soil pipe shall be of lead pipe, and must be made with extra heavy brass ferrules wiped onto lead and caulked into hubs of soil pipe.

The main soil pipe under basement floor must be provided with extra heavy brass tapered thread cleanout screws (where shown on plan), said cleanouts to be brought to the surface of floor so as to be accessible in case sewer should stop up.

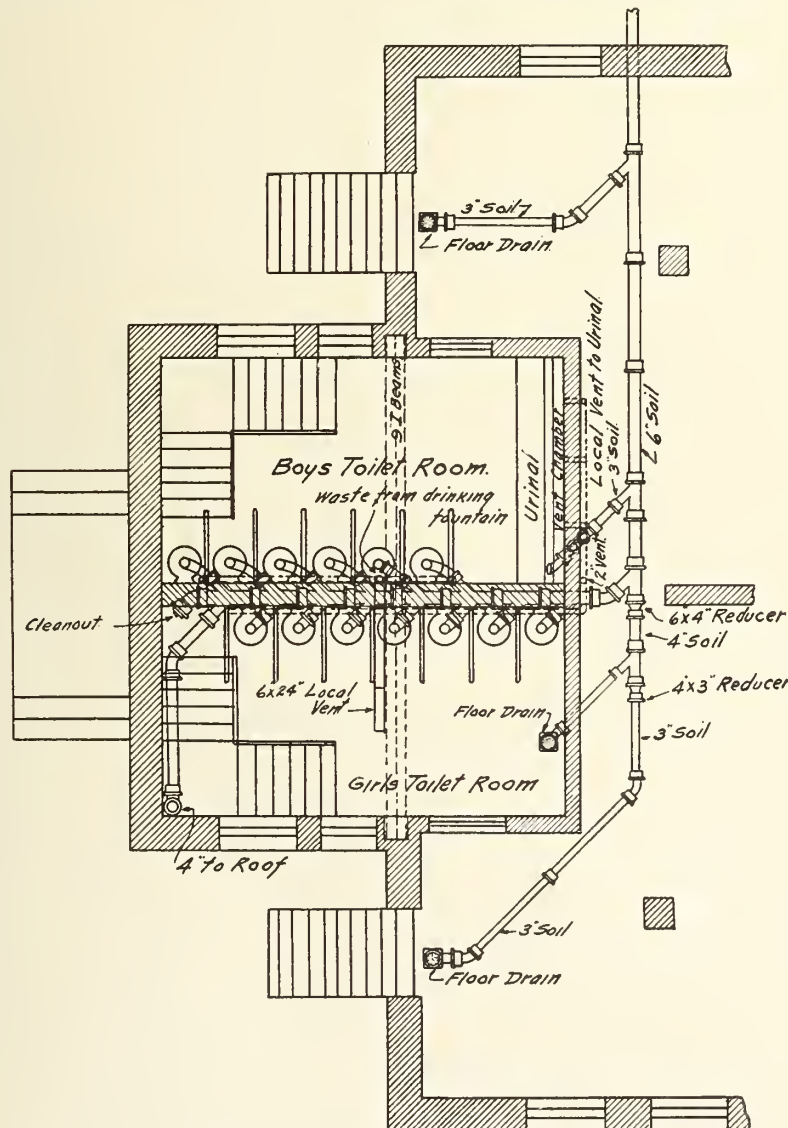
The traps on urinal bowls and drinking fountains must be provided with vent



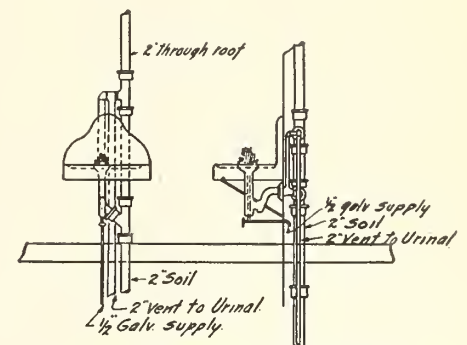
Teachers' Closet on Second Floor.

pipes, the vent to be taken from the crown of trap or branched into sewer as near trap as practical. The back air vent to extend vertical above the top of the fixture before running horizontal. The sizes of all vents to be same as provided in the plumbing ordinance.

Each closet is to be separately connected to the main with a Y and eighth bend. Each lead bend shall weigh not less than eight pounds and shall be con-



Plan of Toilet Rooms in School.



Section of Drinking Fountain.

nected to the soil pipe with extra heavy brass ferrules wiped onto the lead bends which shall be fastened to flanges.

Each closet is to be provided with a heavy brass floor flange and shall be set on an asbestos ring or with white lead.

Leave 4-inch branches for future closets, one on each side, and bring outlet above floor and plug tight.

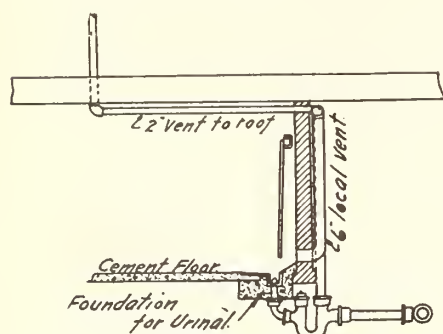


All the back air vent pipes to be galvanized wrought iron pipe put together with screwed threads and galvanized wrought iron extra heavy fittings. All back venting must be done subject to the approval of the plumbing inspector. Where connections are made with traps or sewer, said connections must be made with ground joint brass union, one end of which must be wiped onto lead pipe, the other screwed onto iron pipe. All soil pipe and back air vents running vertically or horizontally must be thoroughly supported by extra heavy drive hooks or special iron hangers fastened with expansion bolts on brick or stone wall if run on same.

**Floor Drains.**—Furnish and set three 8-inch square floor drains as shown on plan and furnish and set a  $\frac{1}{2}$  S cast iron trap under each drain.

**Local Vents.**—Connect the urinal with three 6-inch pipes and increase to 8 inches at closets. The six rear closets to be vented with a 6-inch pipe and the balance into an 8-inch pipe. The main to roof shall be 6-inch x 24-inch flat pipe. Each closet shall be separately vented with 2-inch galvanized pipe into main. The connection at closet and extending 6 inches above to be of lead to prevent rusting. All of the above local vent pipes are to be 28 gauge genuine galvanized charcoal iron. Leave branches in vents for future closets on main.

**Excavating.**—The joints in main drain to be made with Portland cement, and each joint must be carefully cleaned out as the pipe is laid to avoid any obstruction being left to retard the flow of



Section of Urinal.

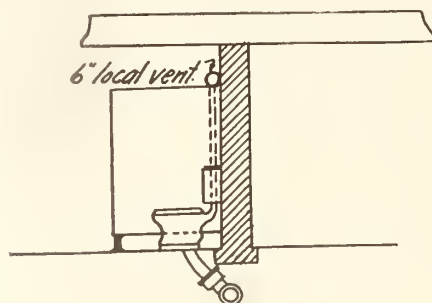
sewage. At the time the sewer is being laid the inspector will inspect the work and approve of same before any filling is done.

The filling must be done by puddling with water or tamping, or both. All earth must be put back, or more, if required, to grade grounds to same condition as before disturbed. All excavation in basement must be done in the same manner as described above.

**Service Pipe.**—From the present water main in Hamilton Avenue run a line of  $1\frac{1}{4}$ -inch galvanized wrought iron pipe to toilet room and supply each closet off

the  $1\frac{1}{4}$ -inch main through  $\frac{1}{2}$ -inch iron pipe size N.P. brass pipe.

Supply the urinal at both ends with 1-inch galvanized pipe of the  $1\frac{1}{4}$ -inch main. The drinking fountains shall be supplied through  $\frac{1}{2}$ -inch galvanized pipe. Supply teachers' closet and bowl through  $\frac{1}{2}$ -inch galvanized pipe.



Section of Closet.

The exposed supply pipe on fountains, teachers' closet and bowl shall be  $\frac{1}{2}$ -inch N.P. iron pipe size brass pipe.

**Shut-off Valves.**

- 1— $1\frac{1}{4}$ -inch at front cellar wall.
- 13— $\frac{1}{2}$ -inch one on each closet in toilet rooms.
- 2— $\frac{1}{2}$ -inch on teachers' closet and bowl.
- 2— $\frac{1}{2}$ -inch one on each drinking fountain.
- 2—1-inch one on each end of urinal.

## VETERAN INSPECTOR RESIGNS.

Vancouver, B.C., Jan. 8.—Plumbers generally learned with regret of the resignation of Robert Marrion, sanitary inspector of Vancouver. Mr. Marrion as been in civic service for sixteen years, and his length of time in the employ of the city has been exceeded only by one other official. A plumber himself, during all that time, he has been in close touch with the plumbers of the city, who regarded him with respect and always received due consideration from them.

He is an old country man, having served his apprenticeship and learned the profession of a sanitary and plumbing engineer with Crapper & Son, of Chelsea, England. He filled the position of foreman and manager with this firm subsequently, until he left for St. Joseph, Mo., with his brother. He had charge of plumbing works for two years in that city and returned to resume his place with Crapper & Son. In 1886 he came out to Victoria and joined his brother in business there. After being there a year he came to take position of manager of the Vancouver Gas Company, which he held for seven years. When the city of Vancouver wanted a man to fill the dual position of health inspector and plumbing inspector, Mr. Marrion obtained the appointment by the almost unanimous vote of the city council. For several

years he carried on the work single-handed, until the growth of the city necessitated the appointment of a permanent medical health officer. Since that, Mr. Marrion has taken complete charge of the plumbing department and has given efficient service.

He will leave the city service at the end of January. At the age of 62, in tendering his resignation, he said that he felt that a younger man should take over the duties of the office.

## Trade Activity.

The report of the plumbing inspector for South Vancouver indicates the large amount of business being done in that municipality. Building has been extensive, the structures being mostly of the smaller size, for dwellings for workingmen. There are many large and handsome residences, though, and the prospect is that plumbers will have much to do there during this year. The statistics are: Permits to instal new plumbing: 1,532; calls to inspect new plumbing, 3,376; fixtures inspected, 13,392; plumbing installed not in accordance with requirements and ordered changed and reinspected, 169; calls to inspect new septic tanks, 2,193; septic tanks not properly installed and ordered changed and reinspected, 653; letters written re defective plumbing, 339. This is the first year that South Vancouver has had an officer of this kind at work. Both in this municipality and Point Grey, official notice has now being taken of new buildings, and permits have to be taken out for all the necessary work. In South Vancouver, the building permits date from October 23rd, when the office of inspector was opened. The total cost since that time is \$280,000, the number of permits being 184.

In Point Grey, the office was open seven and a half months in 1911, and in that period 340 buildings were erected, with an estimated value of \$1,529,750.

In Vancouver, the building for the year amounted to \$17,500,000, an increase of 33 1-3 per cent. over the value of building in 1910. Early in January, permits will be taken out for three buildings of an aggregate value of \$750,000. It is noticeable in Vancouver apartment houses, especially, the class of plumbing fixtures and bathrooms is of the very highest standard, and a marked improvement over what was called for when the first apartment house was erected six years ago.

A hospital to cost \$100,000 is to be built at Regina, Sask.

A two-storey public school is to be erected at Windsor, Ont.

An addition will be made to the Empire Hotel, Lethbridge, Alta.

# Making Use of Discarded Range Boilers

**Various Ways in Which They Can be Turned to Account—Feeding Troughs, Camp Reservoirs, Feed Mangers, Expansion Tanks, Storage Cylinders; All These Can be Made From Old Range Boilers.**

Editor, Plumber and Steamfitter:—A few numbers back was described how to make use of discarded range boilers as water systems, reservoirs for suburban homes.

Old range boilers have been put to many uses in the past and it is a matter of surprise that they are not used often-er.

One up-to-date farmer secured several and slit or cut the iron the length of the boiler, then cut away the rivets at the heads, half way around, and folded the side pieces back, this made a fine feed trough for pigs, it will also answer as a drinking trough for cattle.

By removing the top cover and sinking an old range boiler into the ground, leaving the top open end an inch or two above the ground, it makes an excellent safe to store food at a camp. You can leave the camp with no fear that stray dogs or cattle will get at your food supply. Besides, it will act as a cooler for the food or liquids. When the steamer takes in your camp kit it will only cost you a few cents extra freight for the extra weight in a couple of range boilers, which they can drop off at the camp.

Excellent feed mangers for stables can be made with them. By cutting a range boiler in two at the centre you will have a couple of excellent open expansion tanks for hot water heating.

They can be converted into No. 7 lubricating oil storage cylinders. By carefully soldering bad spots they make a cheap and safe gasoline or coal oil tank. By soldering bad spots they have been made to do good service as air storage tanks. Partly filling a boiler with dry sand and passing a rod through the centre, to which a handle is attached, will convert it into a passable lawn roller. Painting an advertisement upon it, fast-ening it in some prominent place, makes an attractive and unique sign of up-to-dateness.

With the heads and bottoms removed and placed one above the other and bricked in, they make a flue, equal to, if not better, than tile pipe

I have seen them partly buried in the ground and used as fence posts, iron pipe being screwed into the top holes, and run around the lot as a fence. There was one house on Farley Avenue, Toronto, that had a fence of this description and so far as I know it is still there. There are many other purposes for which they can

be used, but these suggestions should help some.

The junk man refuses to buy the galvanized iron ones, and the plumber or householder is generally only too glad to get rid of them without having to pay to do so, and therefore, makes the junk man a present of any old boilers on hand.

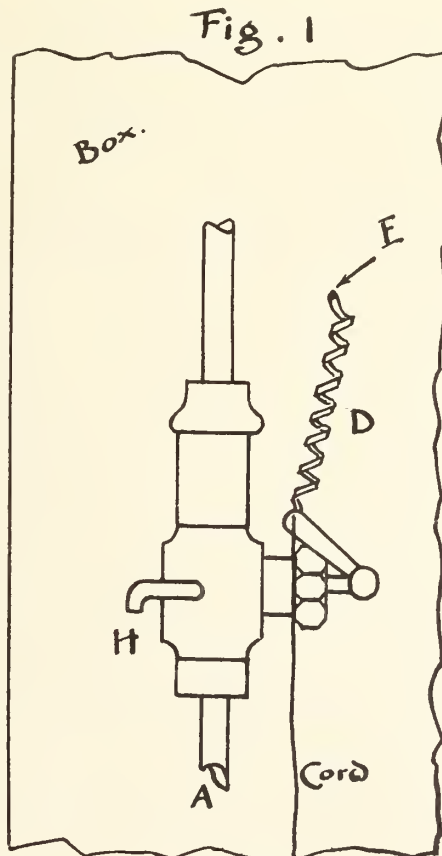
J. T.

## Original Scheme To Stop Freezing

Plumbers are sometimes requested to install water pipes in places where the temperature is below freezing point during the winter months.

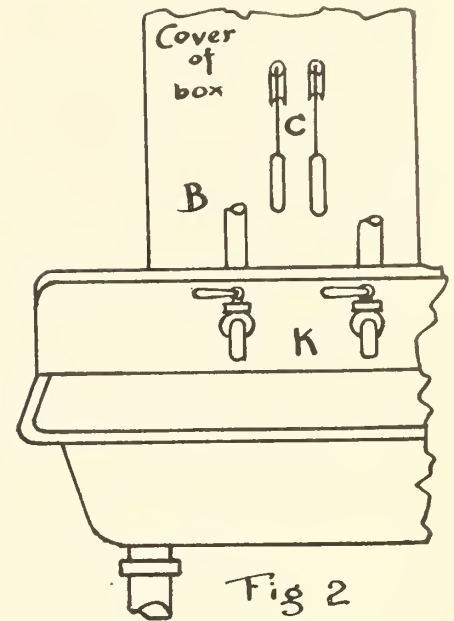
A job which came under my notice is partly illustrated in Figs. 1, 2 and 3 and 4.

Fig. 1 shows a small section inside the pipe box. A spring is attached to the cock handle and to the back of the box at E. When the cock handles are in the position shown,



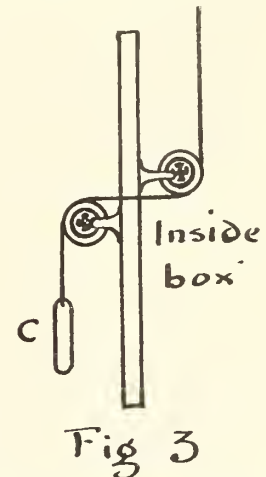
the water is cut off from the sink cocks at K., Fig. 2.

The stop and waste cocks are in a room above the sink room and the tem-



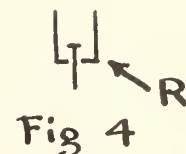
perature in it is always above freezing point.

By using a system of pulleys, the cocks, with spring attached, could be located in room not directly over sink room, or several stories above it. The



scheme is principally of use where the feed water is from above.

Fig. 1 is drawn to a larger scale than Fig. 2, so that the idea can be easily understood.



By pulling down on one of the handles C-Fig. 2, the stop cock will be opened and allow the water to flow to the sink taps, fig. 2, when the handle is re-

(Continued on page 13.)





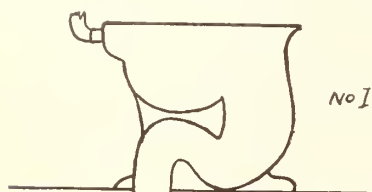
# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## WASHDOWN AND SYPHON CLOSETS.

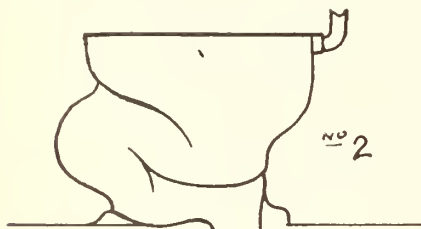
Editor Plumber and Steamfitter,—The other day a prospective customer asked me to show him by a drawing the difference between a siphon and a wash-



out closet and I could not do it. Will you be kind enough to publish a drawing of each that would answer? Also which kind of closet bowl is used more to-day?

J. C. DeVoe.

In drawing number one we give a general idea of the type of bowl known as washout, while in drawing number two we show the idea of the siphon jet bowl, which, we believe, has to-day the prefer-



ence in general usage. It must be understood that these are taken as fairly representative types and do not pertain to represent any particular maker's closet bowl.—D. C. H.

## CLEANING OUT CLOSET BOWLS.

Editor Plumber and Steamfitter.—Sometimes my customers kick to me about the gradual accumulations of crusty matter upon the inside of the closet bowl. Said crustations are so hard that it is almost impossible to remove them with a knife without damaging the enamel of the bowl. What can be done in such instances?

WILLIAM JONES.

In such a case we are informed that muriatic acid, well diluted in water, will

effectively remove the scale. There are various preparations placed upon the market which are designed to prevent this very happening which occurs because the housekeeper is negligent in caring for the cleanliness of the bathroom.

Obtain some of these cleansing preparations from the manufacturer and keep them for sale in your shop after having experimented with them and learned how to use them to advantage, and also which pan out the best.—D. C. H.

## CONNECTING HOUSE MAIN TO WATER MAIN.

Editor Plumber and Steamfitter.—About what length should the lead pipe be at the point where it is connected to the corporation cock on the water main in the street?

W. J. M.

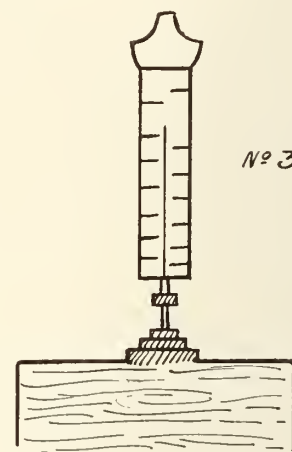
Generally, where this pipe is connected to galvanized pipe after being hooked up to the water main, this pipe is made about three feet long. If the entire water service is to be run with lead pipe, as is the case in some parts of the country, a slack of six or eight inches should be allowed. Slack should also be allowed in case the lead pipe is again connected to galvanized iron pipe.

In some cases no lead pipe is used at all, the galvanized iron pipe being connected directly to the corporation cock by means of two ells and a nipple so set that the pipe will have some expansion. We believe that the latter practice, however, is not looked upon as being strictly first-class, by the majority of good plumbers, as the expansion so obtained does not seem to be sufficient to meet the requirements of the occasion.—D. C. H.

## WHY THE THERMOMETER REGISTERED INCORRECTLY.

Editor Plumber and Steamfitter.—Some time ago I had occasion to put in a thermometer at top of a hot water boiler and the hole tapped at the top

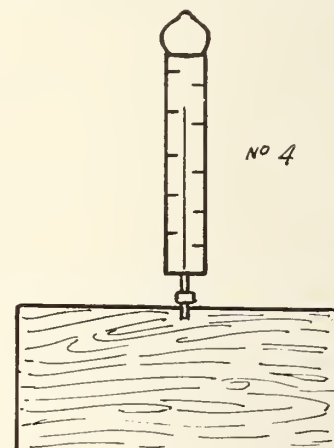
was very much too large. I had to bush it down as shown in the drawing I enclose. (Shown in drawing No. 3.) Now the water drawn off through the air



valves anywhere on the job shows up hotter than the degrees registered by the thermometer. What is the matter? How can I fix it?

JOHN GRIENER.

The bottom of the thermometer, in drawing number 3, is surrounded by air and touched little, or none, by the water in the boiler and therefore could not possibly give the right temperature



of the water. Draw down the water in the job and remove the three bushings, substituting what is known as a "blind bushing" and fixing after the fashion

illustrated by figure 4 and your thermometer should register the correct temperature in the hot water boiler when the job is started up and running as it should.—D. C. H.

### THE USE OF LATRINES.

Editor, Plumber and Steamfitter:—  
In a building that may be erected next year, it is suggested that latrines be used in the toilet room. Do you not think that something else could be made use of to a much better effect from a sanitary point of view, to say the least? S. G. C.

The advice we would offer in such a case is to suggest to the people who have the authority to place the contract, that they visit several buildings where latrines are in constant use and then visit buildings where the individual type of water closets are installed and allow the visiting individuals to make their own comparisons. Such a course would place you entirely in the clear from all "knocking."—D. C. H.

### STALE WATER.

Editor Plumber and Steamfitter.—  
Why is it that water that looks all right, sometimes does not seem palatable nor fit to drink?

C. J. MILEN.

Probably because the water has grown stale. In such a condition the water can be improved by a process known as "aeration" if the water is otherwise wholesome. This is accomplished by exposing the water in such a manner that it will absorb air which will improve its taste and looks, but is not guaranteed to remove germs, etc., from the water. Indeed, if great pains be not taken in the process, germs will be injected into the water if dust is allowed to enter the water in the process of aeration. This may not interest readers where water is to be obtained in plenty, but for the sake of the correspondent and also in places where water is scarce, we reply rather at length.—D. C. H.

### HEIGHT OF THE URINAL.

Editor Plumber and Steamfitter.—  
Kindly tell me what is the proper, or general, height at which to set a urinal in a toilet room, and oblige.

A Reader.

Unless there is something out of usual in the installation the urinal should be so set that it is twenty-two inches from the top of the lip to the floor. From this, you can make your own calculations as to the "roughing in."—D. C. H.

### MELTING POINT OF SOLDER.

Editor Plumber and Steamfitter.—  
Will you please tell me the melting point of plumbers' solders and oblige.  
An Apprentice.

Of course, it melts at about 480 degrees, while if fine in proportion of one part tin to one part lead, it will melt at some 370 degrees. A mixture of 60 parts lead to 40 parts tin would melt at 440 degrees.—D.C.H.

### WHAT IS A BRANCH?

Editor Plumber and Steamfitter:—  
In some examination papers I was looking over I came across the question, "What is a branch?" Can you give me a good, all around definition of it?

Questioner.

As applied to plumbing or heating we should say that a branch was a pipe or metal connections which extended from the main line of pipe. We believe that that would cover both propositions and that it is not necessary to tell what purpose the branch accomplished, unless the question was asked directly in connection with plumbing or heating.—D. C. H.

### FROM WHAT IS OAKUM MADE?

Editor Plumber and Steamfitter:—  
Will you tell me what oakum is?

M. L.

It is the coarse part which is separated from hemp or flax in hackling and if you have hung around a plumbing shop very long you know for what oakum is used there.—D. C. H.

## What is Being Done In Ontario Society

Secretary Frankland, of the Ontario Society of Domestic Sanitary and Heating Engineers writes to Plumber and Steamfitter as follows:—

"Regarding the Ontario Society, I find no improvement in the matter of receiving answer from members when I write to them. This is a sad state of affairs. If members in different sections will not give the information asked for by the officers, I fail to see how we are going to ascertain the facts that we need in completing the society organization.

"I had a visitor last week in the person of Mr. Gies of Bernhardt & Gies, Preston. He expressed his satisfaction

with the way the Ontario society were going about organizing the trade in Ontario.

"Correspondence has been received from J. A. Caslake, of Collingwood, who states that all hands are busy there and that the outlook is good for 1912.

"Good reports have been received from Stratford through our respected colleague Harry Peter.

"Enquiries have been received from Ottawa and Hamilton. The directors will journey to Hamilton shortly in connection with the work of the society in that place.

"Best wishes for a prosperous new year to all members in Ontario, have been received from John Watson, Montreal, secretary of the Canadian society."

### ANNUAL BANQUET HELD.

On Thursday night the annual banquet of the Electrical Association of Quebec was held in Montreal, when the members enjoyed an excellent repast and the songs and stories which came from many members. Some stirring speeches were made too, among those responding to toasts being His Worship Mayor Guerin, Ald. Leslie Boyd, James Balfantyne, H. D. Crouch, R. E. H. Jones, James Belnett, W. B. Shaw, J. A. Valois, and E. W. Sayer.

### ORIGINAL SCHEME TO STOP FREEZING.

(Continued from page 11)

leased the spring D. will close the cock, air will enter at H, and allow the pipe under the cock to empty.

A small quantity of water might escape at H when the cock is opened and closed, but the amount will be small and do little or no harm, if necessary the workmen can make a couple of "nail" vacuum valves and fasten, or solder them on the ends of tubes I & J. This will prevent the escape of any water.

The vacuum valve is shown at fig. 4. It consists of a piece of  $\frac{1}{2}$  or  $\frac{3}{4}$  in. brass tube. One end is turned or hammered over as at A. A small nail is used for the valve, using only the head and about  $\frac{1}{8}$  of an inch of the nail stem. Fig. 4 will give a good idea of the thing. Fig. 3 shows how the handle cords can be arranged to run over the pulleys.

I would suggest that the handles be removed from the cocks K during cold weather, for they might be left closed, thus trapping the water in the pipes. This is a very simple arrangement, and original, so far as I know.

J. E. N.





# POINTS ON HEATING

By  
CHAS. H. DENISON



## Chapter 22.

This is an inventive and a progressive age. Seems but a few years ago when the principal means of heating was the parlor stove. Pulled up around it and with our feet on the stove rail, we assumed that we were taking the greatest of comfort.

Then along came the hot air furnace, which was regarded as a great improvement, and we could get our feet warm without hoisting them on a stove rail, but we sometimes sputtered and choked with the coal gas that came up through the hot air register. Old "Time" then gives his belt a hitch and steps out some brisker, and we have the steam heating, coal burning boiler which, later, or earlier, maybe, is adapted to hot water heating.

But all of these contrivances for heating used either coal or wood as the fuel for furnishing the heat, and what I want to describe in this article is a steam boiler used for heating churches, hotels, houses and business blocks, that burns quite a different fuel, viz., crude oil.

Your humble servant comes from a part of the country where crude oil mostly isn't. We see very little of that product, and all of our heating is done by either soft or hard coal or coke. Consequently this steam boiler, fired by crude oil, was a novelty, and I shall describe it for the benefit of the readers who never have observed anything of the kind.

The steam boiler was of the type that has been used in hundreds of cases elsewhere for many years, and, in this case, was sunk in a pit, as the cellar was low, and it was rendered necessary in order to get the right pitch on the steam mains. No grates were in the boiler as they were not required and would only have been in the way.

This job was in an apartment house, and the engineer told me that there was some 1,200 feet of radiation hooked up to the boiler. I noticed that the automatic damper was nicely balanced and the chain was connected to a valve with a lever handle, said valve being on the oil feed pipe and being opened and shut as the steam pressure varied.

The tank which held the crude oil was located outside the building, very near the alley, and was fed by a pipe sufficiently large to enable the oil man to insert a hose and run about 800 gallons of crude oil into the tank at a time, from whence it was pumped to the house through an inch and a half feed pipe.

The ash pit was about a foot deeper than we (in the east) usually make them and was lined with fire brick. When I saw the amount of flame engendered, I did not wonder. A hole large enough for a one inch pipe was drilled through the top of the ash pit door and the oil entered through the pipe at that point. At the end of the pipe was a plugged ell, in the heel of which was drilled a hole about an eighth of an inch in diameter. The oil was blown into the fire box under a pressure of from thirty to thirty-five pounds, and when burning developed a flame which flowed all through the boiler to the very smokestack, as could be ascertained by quickly opening the clean-out doors of the boiler. I visited this plant several times, and the apparatus was working perfectly, the electric-driven motor running quietly and the only noise being a rather heavy roaring of the oil burning in the boiler. Such noise, however, was not noticeable up in the house.

I have seen few jobs in the course of my investigations where the pressure was kept so uniform and with so little trouble, as the apparatus required absolutely no care or attention at all.

Every time that I saw that job the pressure always stood at exactly three pounds, and that's what I can't say of many other steam jobs that I have inspected.

In addition to heating the building there was a coil inserted in the fire pot of the boiler which was connected to about a 200-gallon range boiler in the kitchen. Thus the hot water for the establishment was also obtained from this same oil-burning, steam boiler, which was running, the owner told me, at an expense of about one dollar a day. Asked what the job would cost to run if fired by coal, he estimated that the cost would be from three to four times as much to do the same work, and then it

would not have been performed so reliably nor efficiently.

The dirt and annoyance from coal and ashes done away with entirely, and the ease with which the apparatus is cared for, increased many per cent., I fail to see why, in places where the oil can be obtained at a reasonable figure (I believe that the oil burned in this particular job cost eighty-five cents a barrel) that more of these oil burners are not used. From the observations I made, I believe that oil, at \$3.00 a barrel, would be cheaper than coal at \$6.00 a ton, that it would go farther, furnish a much more uniform heat and be very much less trouble to operate. I would not state these comparisons in the prices as being accurate, as the space of time I had to observe the running of the job was not long enough to allow me to be sure. It is my impression only as to the cost.

So there seems to be little reason why oil should not be used for purposes of raising steam (or in hot water boilers either) in low pressure boilers as well as high pressure boilers. It is used in many plants in the west in high pressure boilers in factories, and also on many of the steam railroads in the locomotives and also to raise the steam which drives the engines in many a steamship.

## MUTUAL INSURANCE FOR MASTER PLUMBERS.

The Wisconsin Supreme Court has decided that the new workmen's compensation law or industrial insurance act of 1911 is constitutional. Many employers have awaited this decision before making their election to come within or without the provisions of the law, and are now coming in. The master plumbers are taking their time, as an organization is now in process of formation to protect the masters. The organization will be in reality a mutual insurance company and is fostered by the Wisconsin Master Plumbers' Association. Formal organization probably will await the general conference of masters on the occasion of the State convention which will probably be held in January.—Plumbers' Trade Journal.

# Allow Margin of Efficiency in Installing Heating Plants

**This is Necessary to Insure Satisfaction, Declares Heating Expert, for Furnaces Are Not Going to be Tended by Skilled Men Who Can Get the Best Out of Them—The Need of Considering the Locality of a House as Well as Its Size is also Emphasized—Points Illustrated by Concrete Examples Which Will Appeal to the Heating Engineers.**

"When it comes to penny-wise pound-foolish policies, when it comes to economy which is the worst kind of extravagance, then recommend me to the practice of putting small boilers and insufficient radiation in houses."

The speaker was the Manager of a Montreal furnace supply house. He had received a number of complaints of cold houses, and so, obeying the rule of contrast, spoke with heat.

And what this man had to say is of great interest to every plumber and every heating engineer. He spoke from experience, and backed up every statement with a concrete example. What he urged was a special consideration of the needs of each building in which a heating plant is to be installed. He urged the necessity of a margin of efficiency—a margin which would enable furnace handled by an unskilled man to give the service that a smaller plant might give if tended by an expert.

## Two Heating Systems.

"I put a heating system in my own house, about three years ago," remarked the Manager in question. "My neighbor, who lives in a house equally well built and of equal size, looked at my boiler and my radiation. 'Why you're throwing money away,' he said. 'I have a boiler two sizes smaller and less radiation. You're throwing money away.'"

"Well," said the Manager, "I haven't got any money to throw away, but all the same, I decided I would throw some there. I want my house warm. And," he added, "my house was warm; whereas, a year ago, my neighbor came to me and asked that I get him a larger boiler and install also a hundred and fifty feet more radiation. He had saved a little initial cost, but had been compelled to spend more for coal, and had not enjoyed the comfort of a perfectly warm house."

"Then," continued this heating expert, "there was the case of a friend of mine who bought a house on Dorchester Street. His furnace was not giving satisfaction, and he asked me to come in and look it over. I suggested a larger boiler."

"Great Scott!" almost shouted the householder, "do you think I'm running

a coal mine here? I'm burning more coal than I can well afford now."

"I said: 'what would you think if the larger boiler meant you spent less and not more on coal.'"

"If you make that a guarantee," the Dorchester Street man said, "I'll order that larger boiler right away."

"We seldom do that," the furnace man declared, "but I thought this time it would be all right to break a rule. I gave the guarantee. The larger boiler was installed, and though that winter was an exceedingly bitter one, 3½ tons of coal were saved and the Dorchester House was heated properly for the first time in several years."

Here the Manager of the Furnace Company broke off, to lay the blame for the situation which he was decriing. "The trouble is with the contractors and the plumbers," he declared. "They try, many of them, to make a cheap estimate on a job. They figure as closely as possible, and in many cases fail utterly to remember that the furnace is not going to be cared for by a man who knows how to humor it and get the most out of it. They don't consider location either. They seem to think what will do for a ten-room house in one district will do for a house of the same size situated in a more exposed position."

## System for an Exposed House.

Again the furnace man illustrated what he meant. "An elderly couple were having a house built on the Boulevard Westmount, which as you know is about as badly exposed a spot as there is in Greater Montreal. The old gentleman came to me with his blue prints and asked me if the heating system there outlined was all right. He said: 'We are not as young as we once were, and we want to be thoroughly warm. I can afford to pay for this comfort.'"

"Well," continued the critic, "I looked the system over, and I suggested a larger boiler and more radiation. The next day I heard from the Architect who had made the plan, and who had specified the heating system after consulting with a plumber. The architect questioned my corrections. He said there had been an adequate system prescribed in the first place. I didn't want

to interfere, but I did tell that architect that he had outlined a system which would have nicely heated a house of the size in question, had it been situated in a terrace in the heart of Montreal. But such a system would have meant a cold house on the Boulevard—a cold house when the owner wanted a warm one and was willing to pay for the warmth."

## Grates Caused Trouble.

"Well, my suggestions were followed; and to show satisfaction was given, I may say that the next year, when the old gentleman was having another house built for his son, he again consulted me on the heating system."

Another point which heating engineers might well bear in mind was brought out by one more story which this man of wide experience recounted.

"It is only a little time ago," he seated, "that I got a letter from an Englishman living in St. John, N.B. This man said he was using one of our furnaces. He said: 'My house is cold, while neighbors' houses, no smaller, and served by similar heating systems, are warm.' Naturally, he wanted to know how this was."

"I wrote asking for a plan of the heating system, and this is what I found. In that house there were no less than thirteen open grates. It wasn't the unlucky number which was causing the trouble, but those grates were just sucking up the hot air."

"I suggested to the complainant that he close the flues of all those grates which he was not using. He did this, and wrote me a few days later that the heating system was working perfectly."

## Looked for Big Trouble.

"Of course that Englishman had consulted a plumber regarding his system. The plumber had not discovered the trouble. He was probably looking for something big, and never thought of the open grates causing the drawing off of the heat."

There is much in all that this Heating man says. Especially is it true that Heating Engineers should consider each bit of work separately. What would do finely for one house might be absolutely inadequate for a building of similar size differently located.



# National Registration of Plumbers Urged

Thomas Watson, Provincial Sanitary Inspector of Saskatchewan, Urges That Action be Taken—An Interesting Historical Review of the Matter—His Views on Change of Name.

By Thomas Watson, Regina.

THIS is a subject which for a time has been occasioning considerable thought among members of the "craft" in Canada. The word craft is used advisedly, as from reports of conventions, etc., which have appeared in Plumber and Steamfitter in recent times, there is serious reason to fear for its disappearance as one of the oldest, as well as one of the most honorable "guilds" of the building trades.

From the pages of this journal in connection with the formation of the Ontario branch of plumbers and steamfitters we had a good historical account of the old trade, and how its craftsmen came, with their knowledge and cunning, to Canada.

Notwithstanding all the reasons that have been advanced for discarding the old trade name with all its associations many are of opinion that the designation is an unfortunate choice, and that it ought not and will not be assumed by many members of the trade. What's in a name? is often asked. A good deal. Without being hyper-critical let us consider whether the reasons put forward warrant the change, and if so, is the new one appropriate or judicious? No one will dispute the importance of the knowledge it is necessary for one to possess, who is to be consulted to advise, plan, arrange and execute so important a matter as the sanitary drainage, fixtures, etc., of dwellings and other buildings, and all agree that the plumber, as a plumber is best fitted to do so. Why then should he change his name? To do this does not require the knowledge of a sanitary engineer, and there is no indication that plumbers, even under their new designation are to qualify as such. The assumption of the name we believe to have been without due consideration of what the term implies, and that no appropriation or plagiarism (?) was designed. Sanitary engineers, for such there are by virtue of right, have problems of far greater complexity to deal with, than plumbers themselves will attempt to tackle. If this is so, then is the change in harmony with the calling? What more honorable name than that of plumber?

Unless this is conceded it will be useless to agitate for "registration of plumbers" simply because there will be no plumbers to register. Is this logical? or is it only master plumbers that are to assume the title? Maybe so, then we will still have plumbers (opera-

## THE OTHER SIDE.

In dealing with the necessity for national control of the registration of plumbers, Thomas Watson, the Saskatchewan provincial sanitary inspector, takes occasion to express his belief in the old name "plumber" in preference to the newer designation of the craft. There are two sides to every question and Mr. Watson's views will doubtless be of interest to all members of the craft. In dealing with the question of registration, he has made out a strong case and the matter is commended to the attention of the national officers.—Editor.

tives) who may wish for registration. All the foregoing may be considered beside the question, but is it not well to understand by whom registration is desired? To simplify consideration of the question let us assume there will still be master plumbers, anxious to raise the standard of the craft by agitating for registration as a means to reach a higher status. By what way shall the object be attained to arrive at a uniform standard of merit in workmanship and technical knowledge? All will agree that examination is necessary and that only in this way can the right to register be granted. This entails the creation of an examining body, which will command, not only respect, but confidence to carry out the necessary rules, regulations, syllabus and mode of tests laid down and adopted for candidates wish to qualify. In several centres local authorities have constituted themselves the major portion of examining boards for issuing licenses to plumbers, and without finding fault with such boards or misjudging their good intentions, it must be evident that this method does not "fill the bill." At best, their passed and licensed men only obtain a local status, which may be useless to the holder in the next town or district. Registration to be of value must carry one who has qualified to obtain it, recognition wherever he may travel, at least in the country where such is granted. It must be national. This national registration of plumbers must be inaugurated and granted by plumbers—they must work out their own salvation.

## Work for National.

In this there is a subject which ought to be taken up by the executive of the National Association, and submitted in concrete shape for consideration at the next convention in Calgary. There is no body better able to deal with it, or more fitted to suggest the lines upon which it could be successfully launched and conducted. The board of examiners ought to be composed of practical plumbers, masters and men.

As a precedent for guidance, there is the "National Registration of Plumbers of Great Britain," a body that has the recognition, sympathy and support of public sanitary boards, medical officers of health, technical educational authorities, architects, sanitary engineers and the general public. The registration is carried out by the Worshipful Company of Plumbers, London; which was founded by Edward III., A.D. 1365.

The objects are to elevate by training in workmanship, technical instruction and registration, the status of the plumber's craft; to give to every competent plumber a certificate which will be recognized throughout the Empire; and to aid by these means in the protection of the public health.

## Method of Registration.

The method of registration by the company is through a general committee in London, and district councils and local committees in the chief cities and towns of the Kingdom, thoroughly representing both the plumbing trade and the public.

The conditions of registration.—All applications are considered by committees of registration which include representatives of the public as well as practical plumbers, in order that no trade interest or prejudice may operate against any applicant.

All applicants who cannot satisfy the registration committee of their experience are required to pass an examination by a board of examiners composed of practical plumbers.

Certificates of registration, bearing the company's seal and arms are granted to those entitled to use the letters R.P. after their names.

Lists of the names and addresses of registered plumbers are published from time to time in the press, and are also supplied to architects, sanitary authorities and others.

Branches are established in every im-



portant centre, with examiners appointed to each.

This short resume may be of service, and although we have no worshipful company of such antiquity as that of London as a basis from which to raise our structure of registration, we have men of honorable and efficient worth who can by combination lay the foundations of a society that would command respect, and be of equal benefit on similar lines, for the plumber's and the public's good.

There is no need for a sanitary inspector making any apology for offering such suggestions, because there is no other official in the sanitary or health service of the public who has a closer relation with the honorable trade of plumber than he, or is more intimately concerned with the principles of good plumbing.

Educational authorities are providing opportunities for young men acquiring technical education and practical training, and there is no class of mechanic who may not benefit by attendance on such instruction,—may plumbers lead in taking advantage of such opportunities.

There is no limit to the height or scope of the educational usefulness of associations such as have been formed by the allied trades, in training men in the several branches, and the coming of the permanent organizing official might be followed by the employment of another, whose duty would be that of traveling teacher, imparting technical knowledge to classes at various centres.

The National Association would be equivalent to the worshipful company to issue registration certificates under its Dominion seal.

possible an excuse for the ideas that are in some respects foreign to the intelligent operation of the whole.

In Illinois there has been a law made and passed, which went into effect on July 1 of the present year, against the public drinking cup. It has become a misdemeanor for any public drinking fountain of any kind to have attached thereto any form of vessel for drinking purposes unless it be an individual paper cup. In its place there has been installed the bubbling fountain. In the public buildings, office structures, stores, parks, libraries, schools and kindred structures where the public is permitted to enter, the bubbling fountain has become a common sight. No longer is seen the drinking vessel with its filth and with its lurking disease germs.

While a subject for jest, there can be no doubt that the movement was one of intelligence. It makes for more sanitary conditions, if nothing more, which is its least virtue, and lays the way for other and greater reforms in this respect.

The public drinking vessel and the public towel have both been branded as spreaders of disease in Illinois, and there is sure to follow some results that will

## Banning the Public Drinking Cup

**A New Sanitary Law is Introduced in Illinois, Which Makes Compulsory the Use of New Sanitary Appliances — The Old Way and the New.**

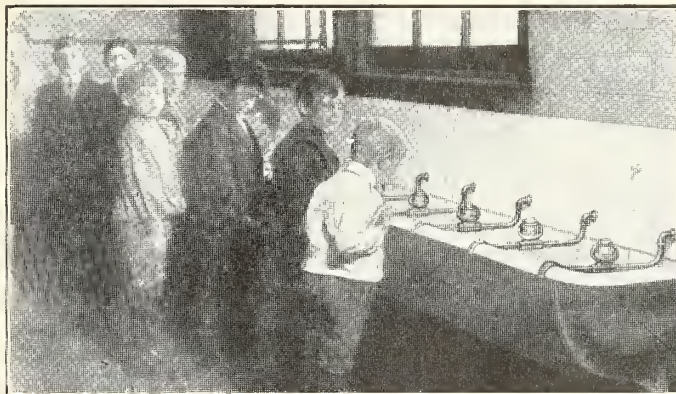
**A**N interesting article on the new sanitary bubble fountain, which is gradually finding its way into public buildings to replace the common drinking cup, appears in the current issue of "Modern Sanitation." Some extracts are herewith presented.

An activity, notable for its intelligence and forethought, is doing much to eradicate some of the unsanitary evils in this country. We have reached an age intelligent for its saner ideas with reference to sanitation, and all things sanitary are being made matters of public concern. In the old days it was simply a matter that concerned the individual, or at best the few. Now it has been augmented and has become an issue of national importance.

While it is true there are many jests made at the expense of many reforms in

this way, and there are indeed some fads that are sailing under the name of sanitary reforms, there must be sufficient good come of the whole subject to make

prove the wisdom of this action within a short time. There are other reforms advisable as yet, some of which will not bear public mention, but which are apparent to every thinking person, and these, too, must sooner or later be put under the ban of eradication and abomination.



One of the New Bubbling Fountains in Use.



Before the New Chicago Law Became Effective.

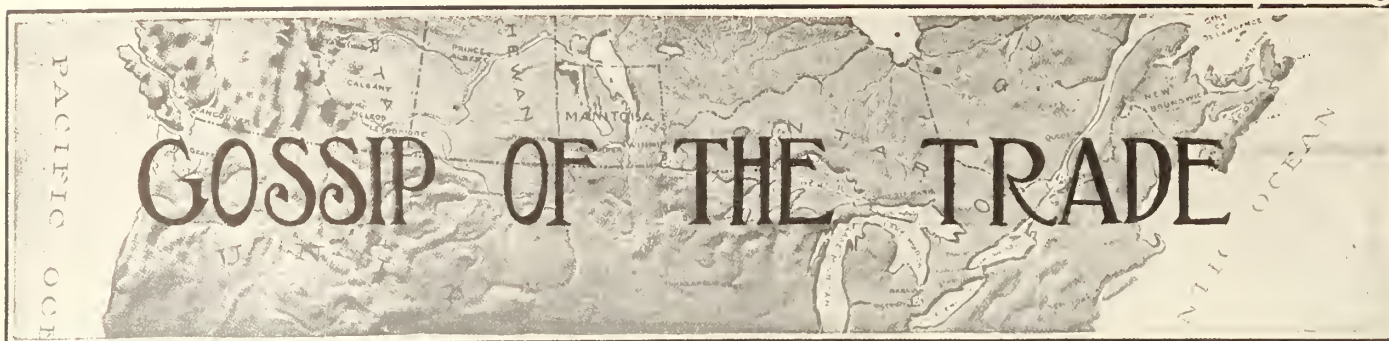
### OLD EMPLOYEE HONORED.

Galt, Ont.—A complimentary address was presented to Reginald Curtis, of the Canadian Tap and Die Co., one of the oldest and most trusted employees of that firm.

### A GREETING CARD.

A New Year greeting card has been received from the officers and directors of the Mechanics Supply Co., Quebec.





#### Bob Yeomans Wins.

Toronto, Ont.—R. M. Yeomans was elected to the aldermanic board for the second consecutive year.

#### Starts at Strathroy.

Stratford, Ont.—Arthur Lawson, formerly of Stratford, has embarked in the plumbing business at Strathroy.

#### Ald. Mahoney Again.

Guelph, Ont.—Harry Mahoney, master plumber, was elected as a member of the city council with a substantial vote.

#### Aldermen Banquetted Plumbers.

Moose Jaw, Sask.—A banquet was held here for the members of the Plumbers' Union. Ald.-elect MacWatt was the host.

#### Aylmer Business Sold.

Aylmer, Ont.—Geo. Ellis has purchased the tinsmithing and plumbing departments of the business of J. Y. Smiley. He will continue in business in the old stand.

#### Fire at Joe Laurier's.

Montreal, Que.—A blaze which caused \$3,000 damage, occurred in the office of J. Laurier, master plumber. The fire is believed to have been caused by an explosion of gas in the furnace under his establishment.

#### Thos. Barnett Dies.

Walkerton, Ont.—Thomas Barnett, who conducted a tinsmithing business here until three years ago, died in Toronto from an attack of pneumonia. He was buried here.

#### News Briefs.

Welland, Ont.—The contract for the installation of steam heating and plumbing in the Dexter House has been let to S. P. Gourlay. The price runs between three and four thousand dollars.

#### Calgary Plumbers' Smoke.

Calgary, Alta.—The Plumbers' and Steamfitters' Union held their annual smoker on Thursday night. A large crowd was on hand to enjoy the varied programme of vocal and instrumental music. Refreshments were served.

#### Public Convenience.

Hamilton, Ont.—The council at their first business session gave the public

#### ABOLISH TUB TAX.

Montreal, Jan. 4. — Montreal's bath tub tax, a relic of the days when bath taps and bath tubs were among the luxuries of the rich, will probably be abolished. The tax is one dollar per bath tap in all houses having a rental of \$150 per year or over. Last year it netted \$23,000. The Board of Control met to-day and heard protests against the tax. It was pointed out that the tax now fell on poor as well as rich, as rentals had greatly enhanced in the last few years, and the board recommended its abolishment.

convenience by-law a third reading. Work will be proceeded with as soon as weather conditions permit.

#### New Inspectors Appointed.

Montreal, Que.—Four new sanitary inspectors were appointed by the Board of Control. Owing to the increasing foreign element, two of those chosen were linguists, one speaking seven languages. Their names are Aaron Honigman, a Russian; Alf. J. Assof, an Egyptian; Avila Pare and Gaspé Rice.

#### To Reorganize Service.

Quebec, Que.—The legislature opened here with the reading of the speech from the throne. One clause was of particular interest to members of the sanitary trade:—"Our sanitary service will be reorganized next summer. To that end the Province will be divided into several inspection districts with a hygienist in charge of each."

#### The Plumbers' Harvest.

Brantford, Ont.—Low pressure of the natural gas one day recently created a harvest for the plumbers. From all parts of the city comes word of the freezing up of pipes and the bursting of radiators and other damage which will amount to hundreds of dollars. It is claimed that there is a bad break in the pipe supplying the city with natural gas.

#### Preparations for Ball.

Toronto, Ont.—A. F. Passmore, chairman of the committee, has issued invitations for the annual at home of the Toronto Society of Domestic Sanitary and Heating Engineers on Friday evening, Feb. 2. It will be held in the Canadian Foresters' building, and promises to be the best social event yet held in the Queen City. Acceptances are already pouring in.

#### J. B. Morine Deceased.

Quebec, Que.—The death occurred recently of J. B. Morine, who for many years past conducted a plumbing and tinsmithing establishment at the corner of Notre Dame and Sous-le-Fort Sts. Deceased, who was well known and highly esteemed, had been in ill-health for over a year past. He was sixty-seven years of age. The late Mr. Morin is survived by four sons and three daughters.

#### A Bas Bath Tax.

Montreal, Que.—The aldermanic caucus decided to approve in council the recommendation of the Board of Control, that after January 1 next, the tax for water used for baths in dwelling houses should be abolished.

At the same time it was pointed out that the remission would further emphasize the injustice which is suffered by citizens. They are already taxed at a higher rate for water than residents within the old city limits and aldermen urged that it would be only justice to take some action which would tend to put water taxation on a uniform basis throughout the city.

#### Contracts in Vancouver.

Vancouver, B.C.—In a recent issue of Plumber and Steamfitter, it was stated that the firm of W. A. Brown had secured the plumbing contract in the J. Rogers seven-storey block. In reality, Barr & Anderson have secured the contract for plumbing, heating, fire lines, gas and vacuum cleaning equipment in this building. When completed, the building will be ten storeys in height. It was also stated that Barr & Anderson have an interest in a pipe manufacturing works located in the east side of



the city. This is not correct as the firm are not interested in any manufacturing concerns.

## Firm Seize Opportunity.

Ebourn, B.C.—The installation of a water system in Richmond municipality created an opening for a live firm of plumbers a need that was filled by Parker & Forster, who have opened a shop on Sea Island. Mr. Parker was foreman of the trenching on the water-works and has 19 years experience to his credit. Mr. Forster is also a practical man. The firm takes contracts for all classes of heating, plumbing and steam-fitting.

## Object to New By-law.

North Toronto, Jan. 4.—The new plumbing by-law recently passed by the Town Council does not make it necessary for a plumbing firm to have a business place in town in order to do work there, but a regulation of this kind exists in the city and North Toronto master plumbers feel that it is unjust that they should be subjected to keen competition from city firms when they are unable to retaliate unless they open another place of business in the city. The matter was discussed while the by-law was being prepared, but the council did not think they could take any action in the matter as they seemed to be a danger of increasing the cost of building by restricting competition in any branch of the business.

## Toronto Officers Elected.

Toronto, Ont.—The annual meeting of the Toronto Association was held here on the evening of January 4. Officers for the ensuing year were elected as follows:—President, Frank Maxwell; vice-president, Harry Waterman; treasurer, T. Maxwell; executive, Wm. Mansell, Geo. Clapperton, Geo. Copper, Gordon Ritchie, J. Aggett, Robert Yeomans, Lewis Legrow, Harry Hicks, T. Hayes, A. F. Passmore, John Wright and E. T. Ncedham. G. F. Frankland declined re-election to the office of secretary as his duties in the capacity of Ontario secretary make it impossible for him to assume other work. The position was left open until a suitable appointment can be arranged. T. Riley and Walter Bodington were appointed auditors.

## Who Is It?

The accompanying photograph has been received by the editor of Plumber and Steamfitter. At first glance it appears to be the portrait of a member of the plumbing craft; but second glance reveals the halo and convinces one that the first guess must be wrong. Nevertheless we have assurance that the subject of the sketch is a master plumber and further we have a recollection of

him singing comic songs at the banquet held last year at the close of the national convention at the Twin Cities. He certainly could sing—which may account for the halo. Otherwise, we are forced to conclude that the picture was taken when the worthy M.P. had just per-



formed a particularly commendable act; declined to cut his price in order to beat out some one else, or refused a drink, or something of that kind.

## HOPING FOR UNION OF ALL PLUMBING ASSOCIATIONS.

Montreal.—One of the subjects which is certain to be discussed at some length at the Calgary convention of the Canadian Society of Sanitary and Heating Engineers is that of Provincial Organizations uniting with the Dominion body. John Watson, the secretary of the Canadian society, is convinced that the future success, not only of the central society, but of the Provincial organizations as well, depends upon some union taking place.

"I do not think," said Mr. Watson, in talking of this matter with a representative of Plumber and Steamfitter, "that those in the Provincial Associations are opposed to the move. I have written a number of them, and the replies I have received indicate that they are willing to have the various bodies bought together. They want their Provincial rights preserved, of course, but that is quite proper."

Mr. Watson expects this question of undoubted importance to be decided in some way at Calgary. It may be impossible to bring about direct federation, but at least the work can be so far advanced that this step will be possible.

## TO USE IRON PIPE.

Toronto.—The committee who have in hand the remodeling of Toronto's plumbing by-law are considering many changes. One of the most important is a proposal to enforce the use of iron pipe for all inside work, tile pipe being allowed only outside buildings.

## FRANKLIN E. SNOW DIES.

Notice has been received of the death of Franklin E. Snow at his home in Greenfield, Mass.

It will be remembered by many business people in Galt that it was Mr. Snow who was chiefly identified with the organization of the Canadian Tap & Die Co., some six years ago.

Being a public-spirited man, he naturally became identified with many industrial and charitable enterprises in the State of Massachusetts. During the past six years Mr. Snow has made a number of trips to Galt.

## SUMMARY OF OPERATIONS.

The annual report of S. W. Royse & Co., Manchester, England, contains an interesting summary of metal operations during the year. It says, in part:—

"Exports of pig iron during the eleven completed months of 1911 were 1,070,436 tons, value £3,435,829, as against 1,119,478 tons, value £3,823,726, in the corresponding period of 1910. Values of pig iron moved disappointingly in 1910, showing a drop of 1s. 1½d. per ton, and the decline continued steadily in 1911. During the early months of this year, the market movements were persistently disappointing, there being no life in the trade, and production being heavy the stock in public stores increased considerably, and by the middle of May prices showed a further fall of 4s. 3d. per ton. During the next three months the trade fluctuated, but on the whole was considerably better and values advanced about 2s. per ton, but in September they quite gave way and by the end of the month nearly the whole of the advance was lost, the result no doubt of the generally unsettled state of affairs at home and abroad. During the last three months the trade has been much better, demand improving and values advancing steadily to the extent of 4s. 6d. per ton. During this month shipments are very heavy, and a large business has been done; there is latterly some slackening in the demand, but the market continues very firm.



## PLUMBING AND HEATING MARKETS

## MONTREAL.

Montreal, January 15.—The more the wintry winds do blow the more do the plumbers and steamfitters smile. The bitter weather, indeed, coupled with the carelessness of many people, is making this season of the year anything but quiet from a business point of view. Pipes are freezing, and furnaces are getting slightly out of order. There is no putting off repairs now. The Sanitary and Heating Engineer is summoned with the greatest haste. His only trouble is to get through all the work which is being thrust upon him.

It might be thought that all this repair work speaks of rather faulty installations. But this is contradicted, contradicted not by the men who made the installations, but by those who sold the goods. The trouble, in almost every case, they declare, is brought about by carelessness on the part of the resident. Where the wind gets full sweep a window will be left slightly open. A man will turn off the water in an exposed radiator during the night. The natural result is frozen pipes, and the other natural result is that those who do not blame the bitter weather blame the man who installed the system.

## Plumbers Not Worrying.

But the plumbers are no worried greatly. They are too busy hurrying about repairing the damage which carelessness has brought about to care much where the blame is laid.

Outside of repair work things are quiet just now. There are few furnaces being bought. Enamelware is not in demand for immediate installation. Business, as far as the manufacturers are concerned, is quiet; yet they are not worrying in the least, for everything points to a heavy trade in the spring, a trade heavier even than that of the season just passed.

Enamelware.—Only small orders are being received for immediate shipments, but the spring business is beginning to show itself. Contractors and architects are giving the supply houses some idea of what they will need, so the manufacturies are not working entirely in the dark.

## No Immediate Drop Likely.

Lead Pipe.—The cold weather has put a stop to the use of this outside, but it is also causing a demand for its interior use. The sale, indeed, is good. Prices remain unchanged. Pig lead has dropped slightly in the past fortnight, but as yet no lower level has been set for piping. Neither is it likely than any decline will take place immediately.

Soil Pipe.—Sales of this line are practically nil. But the manufacturers are busy producing it nevertheless. They foresee a great spring demand, and to prepare for this are keeping their plants running full time. This means the tying up of much capital, but it also means certain earnings when the winter disappears.

Boilers and Radiators.—Busy indeed are those selling these lines, though the orders being received are more for parts than for complete fittings. They are coming from plumbers who have been called in to remedy some breakage resulting from frozen pipes. "The sharp weather," remarked the sales manager of one concern, "has made business exceedingly brisk—brisker almost than I remember at this time of year."

## Iron Pipe Likely to Advance.

Iron Pipe.—Pig iron is scarce at the present time. The handlers did not bring in as much of the metal before navigation closed as they usually do. What caused them to adopt this conservative policy is impossible to say, but the fact remains that iron stocks are low, for the orders of late have been large.

Already, Scotch iron has been brought in at the higher freight rate rendered necessary. So far this has made no change in the price of iron pipe, but if the orders continue large, and more iron has to be carried from Halifax by rail, there will necessarily be a rise in the finished product. This will hardly come for a few weeks, but it seems that an advance will then be made.

Solder.—This is in great demand just now. Where there is much repairing to be done, solder is much needed. The supply is good and prices remain steady.

## TORONTO.

Toronto, Jan. 12.—The demand for plumbing and heating supplies has subsided very considerably. Contract work is now practically over and the trade is occupied largely with jobbing. This means that any orders placed with the supply houses are necessarily small.

There are evidences, however, that a brisk demand will start early in the spring. Enquiries are being received and it is certain that building operations during the year will be heavy. The manufacturers and supply men are counting upon an exceptionally busy year.

Enamelware.—No large orders are being placed for enamelware, but the jobbing work being done is creating a certain amount of demand.

Boilers and Radiators.—The opinion expressed by heating manufacturers is that, while a slight falling off has occurred, the demand is much better than is usually experienced at this time of year. Inside work on new buildings is still going on, despite the extreme cold and boilers are still being ordered, though not in large bulk. Some advise orders for spring delivery have been placed.

Soil Pipe.—Business has fallen off in this line but, the manufacturers are busy preparing for the year's trade that is ahead. Quotations on medium and heavy soil pipe are: 70 and 10. On the 7 and 8-inch sizes, the discount stands at 50 per cent.

Iron Pipe and Fittings.—There is only a seasonable demand for iron pipe at the present time. The prices on pipe are quoted as follows:—

$\frac{1}{4}$ -inch and  $\frac{3}{8}$ -inch, list \$5.50, black, 66 p.c., galv., 51 p.c.;  $\frac{1}{2}$ -inch, list, \$8.50, black, 71 p.c., galv., 60 p.c.;  $\frac{3}{4}$ -inch, list, \$11.50, black 75 p.c., galv., 65 p.c.; 1-inch, list \$16.50, black, 75 p.c. galv., 65 p.c.;  $1\frac{1}{4}$ -inch, list, \$22.50, black, 75 p.c. galv., 65 p.c.;  $1\frac{1}{2}$ -inch, list \$27.00, black, 75 p.c., galv., 65 p.c.; 2-inch, list, \$36, black,  $76\frac{1}{2}$  p.c., galv.,  $66\frac{1}{2}$  p.c.;  $2\frac{1}{2}$ -inch, list, \$57.50, black,  $76\frac{1}{2}$  p.c., galv.,  $66\frac{1}{2}$  p.c.; 3-inch, list, \$75.50, black,  $76\frac{1}{2}$  p.c., galv.,  $66\frac{1}{2}$  p.c.;  $3\frac{1}{2}$ -inch, list \$95.00, black, 75 p.c., galv., 65 p.c.; 4-inch, list, \$108.00, black, 75 p.c., galv., 65 p.c.

Other quotations remain the same as follows:—Cast iron fittings, 65 to 70 per cent.; malleable fittings,  $37\frac{1}{2}$  to 40 per cent.; cast iron bushings, 70; malleable,  $67\frac{1}{2}$ ; nipples, 75 and 10; headers, 60 and 10, although some quote  $67\frac{1}{2}$  and 70; flanged unions, 70; malleable-lipped unions,  $67\frac{1}{2}$  per cent.

Lead Pipe.—Some orders have been filled but they have been mostly of the sorting order. Lead pipe sells at 7 cents a pound, and lead waste at 9 cents, with 25 per cent. off. Caulking is quoted at  $4\frac{1}{2}$  cents. The discount on traps and bends is 45 per cent.

Solder.—There is a heavy demand for solder. The bursting of pipes from cold and other phases of the jobbing work now being done eats up solder rapidly and orders are being placed on all hands. No price changes have been made.

Metals.—There is a brisk tone to the metal trade here. Buying has started again with a steadiness which speaks well for future possibilities. The largest buyers of metal have for the most part been running on light stocks for some weeks back, and they are now in the market for large requirements. The feature of the week has been the continued slump in tin.



## PLUMBING SUPPLIES

National Lowdown Closets  
Imperial Lowdown Closets  
Enamel Lavatories  
Enamel Sinks  
Galvanized Boilers  
Enamel Baths  
Plumbers' Brass Work

Gas Fittings  
Malleable Fittings  
Cast Iron Fittings  
Soil Pipe  
Soil Pipe Fittings  
Black and Galvanized Pipe  
Tools, Etc.

**The National Plumbing Supply Company, Limited,** 115-117-119 Adelaide Street West  
TORONTO, ONTARIO



Hot Water Quick Opening Radiator Valve.

### "Miller" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joints or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.

**MILLER LIMITED, - LONDON, CAN.**



Steam Radiator Valve.



## KERR Steam and Hot Water RADIATOR VALVES

are past the experimental stage.

They set the standard for high quality in material and finish and stand the many tests of use.

Note the seats in Kerr's New Pattern J.D. Radiator Valves which insure perfect drainage.

**The Kerr Engine Co., Ltd.**

VALVE SPECIALISTS

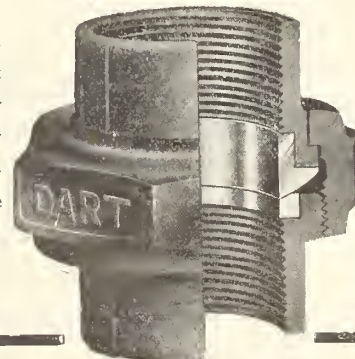
Walkerville - - Ontario

## DART

### "The Union That Never Leaks or Corrodes"

Can be connected time after time without impairing its efficiency. Will stay perfectly tight until deliberately loosened.

The Dart Union makes a joint quickly whether pipes are in or out of line, saving much time and money.



Made in all convenient types, flanged elbow, tees, etc., male or female. Every one guaranteed. Get them from your jobber.

**DART UNION CO., Ltd., TORONTO**



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### BUSINESS CHANCES.

**FOR SALE**—Good plumbing, heating and tin-smithing business in flourishing town of 15,000 in Western Ontario. Established 20 years. Box 607, PLUMBER AND STEAMFITTER, Toronto. (3)

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**ADDING TYPEWRITERS** write, add or subtract in one operation. Elliott Fisher, Limited, Room 314, Stair Building, Toronto.

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**COUNTER CHECK BOOKS**—Especially made for the plumbing and steamfitting trade. Not made by a trust. Send us samples of what you are using—we'll send you right prices. Our holder with patent carbon attachment has no equal on the market. Supplies for blinders and monthly account systems. Business Systems, Limited, Manufacturing Stationers, Toronto.

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**FIRE INSURANCE.** INSURE IN THE HARTFORD. Agencies everywhere in Canada. (tf)

**FROM NOW TILL THE END OF THE YEAR** we offer unusually good bargains in second-hand Typewriters. They are carefully rebuilt, work and look like new, but the price is a mere fraction of the original cost. Write for catalogue. THE MONARCH TYPEWRITER CO., Limited, 46 Adelaide Street West, Toronto, Ont.

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A want ad. in this paper will bring replies from all parts of Canada.

### MISCELLANEOUS.

**MOORE'S Non-Leakable Fountain Pens.** If you have fountain pen troubles of your own, the best remedy is to go to your stationer and purchase from him a Moore's Non-Leakable Fountain Pen. This is the one pen that gives universal satisfaction and it costs no more than you pay for one not as good. Price \$2.50 and upwards. W. J. GAGE & CO., Ltd., Toronto, Sole Agents for Canada.

**MODERN FIREPROOF CONSTRUCTION.** Our system of reinforced concrete work, as successfully used in many of Canada's largest buildings, gives better results at lower cost. "A strong statement" you will say. Write us and let us prove our claims. That's fair. Leach Concrete Co., Limited, 100 King St. West, Toronto.

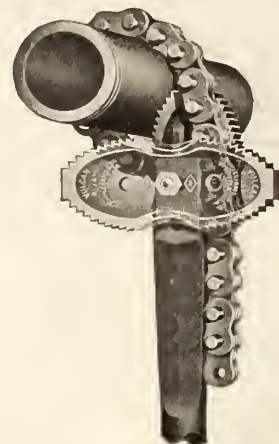
**PENS**—The very best Pens made are those manufactured by William Mitchell Pens, Limited, London, England. W. J. Gage & Co., Limited, Toronto, are sole agents for Canada. Ask your stationer for a 25c. assorted box of Mitchell's Pens and find the pen to suit you.

**THE "Kalamazoo" Loose Leaf Binder** is the only binder that will hold just as many sheets as you actually require and no more. The back is flexible, writing surface flat, alignment perfect. It cannot get out of order. No exposed metal parts or complicated mechanism. Write for booklet. Warwick Bros. & Rutter, Ltd., King and Spadina, Toronto.

**WAREHOUSE AND FACTORY HEATING SYSTEMS.** Taylor-Forbes Company, Limited. Supplied by the trade throughout Canada.

**ONE of the most successful**  
retailers of late years  
says: "When a firm advertises  
in trade papers it is getting  
into good company. As I pick  
up one of a dozen of these  
periodicals here in my office,  
and glance through it, I find  
that the best people, the suc-  
cessful firms, are represented  
in such a way as to reflect  
their importance in the trade."

Keep in mind the dominant fact that mankind from its first appearance on the earth has been schooled by nature to look for signs; for invitations to taste; for suggestions as to what to wear. Tell your story briefly, forcibly, truthfully, and address it through the proper media and you can successfully apply advertising as a means to increased distribution.



## Improved "Vulcan"

(Bijaw Pattern)

### CHAIN PIPE TOOLS ARE SAFE

Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. The use of Vanadium Steel parts in the Vulcan Chain Pipe Wrenches not only gives a decided increase of strength, but a larger factor of safety that is ample protection to the operator.

American Vanadium Facts

That they may command your full confidence and give you superior service in chain pipe tool work, nothing meaning "better goods" will be left undone.

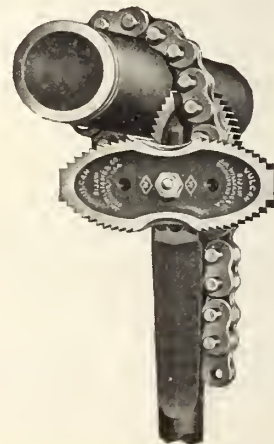
**SERVICE OF TWO.  
PRICE OF ONE.**

**J. H. Williams & Co.**

77 RICHARDS ST.

Superior Drop Forge

BROOKLYN, - NEW YORK



# DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Steamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

## EMERY WHEELS.



### Canadian Hart Wheels

442 Barton St. East, Hamilton

Corundum and Emery Wheels  
Grinding Machines, Beaver  
Oil Stones.

## SHELF BRACKETS.



### Will Hold Up a Shelf

That's what a shelf bracket's for  
For this purpose there can be  
NOTHING BETTER, NOTHING  
CHEAPER than the BRADLEY STEEL  
BRACKET. It is well Japanned, Strong and  
Light. The saving on freight is a good profit  
aside from the lower price at which the goods  
are sold. Order direct or through your jobber.

ATLAS MFG. CO., NEW HAVEN



THIS IS THE DAY OF

## INVESTIGATION

Get in line and let us prove  
to you that the

GENUINE

Armstrong Stocks and Dies

ARE THE BEST.

Catalogue on request.



Armstrong Mfg. Co.

317 Knowlton St.  
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## FILTERS.

### Anti-Splash Tap Filters

The "Galvo" Filter and Water Steriliser  
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There's good money in them for hardware dealers.

Write for Prices.

The Anti-Splash Filter Co.

OWEN SOUND - ONTARIO

*Are you interested in any of the  
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*A Post Card will bring you price  
list and full information*

*Don't forget to mention this  
paper*

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Wholesale Commission Merchants and Manu-  
facturers' Agents. Cars Distributed, Warehoused  
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fer Track. Business solicited.

OUR POSITION IS YOUR OPPORTUNITY  
SASKATOON, WESTERN CANADA

## BRONZE POWDERS

## BRONZE LIQUIDS

The

### Canadian Bronze Powder Works

Montreal Toronto

Works, Valleyfield

Send us your orders and we guarantee the  
quality

When writing advertisers kindly men-  
tion having seen the advertisement in  
this paper.

ASK YOUR JOBBER FOR

STRICTLY THE CANADA METAL CO.  
TORONTO.

## STRICTLY SOLDER

IT GIVES PERFECT SATISFACTION. OUR GUARANTEE BACK OF EVERY POUND.

Manufactured by

The Canada Metal Company, Limited

Fraser Avenue, TORONTO.

Chambers Street, WINNIPEG





No. 6, threading  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  in. complete.  
No changing of Dies or Bushings.



**"WARREN" DIE STOCK**  
(Non receding dies---adjustable.)  
Each stock cuts two sizes. Made in four sizes.

## A Perfect Thread

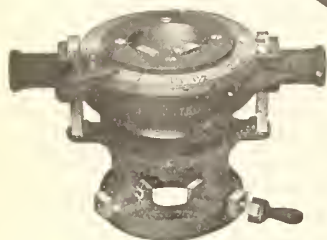
CAN BE EASILY AND QUICKLY OBTAINED  
BY ONE MAN, IF HE USES THE

# "Beaver" Adjustable Die Stock

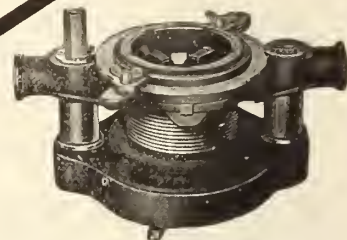
Each die stock contains one set of dies which can be used to cut four different threads  
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*and Sanitary Engineer of Canada*

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No. 3

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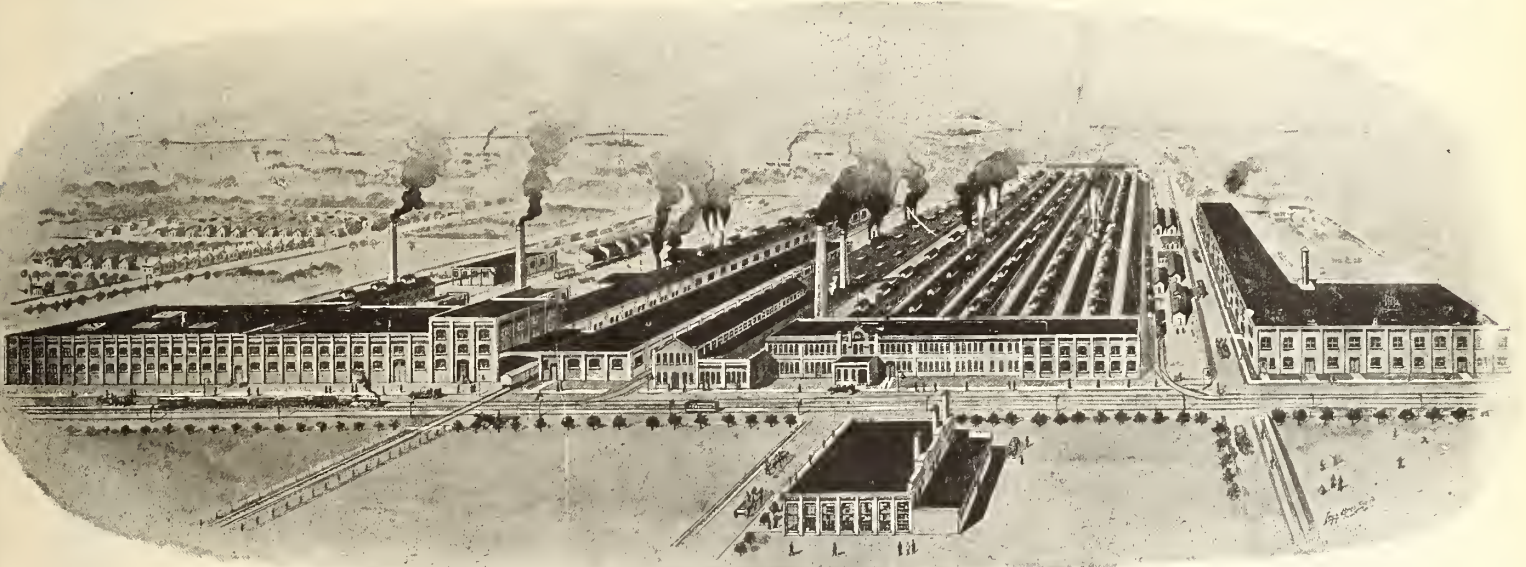
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EASILY INSTALLED—  
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*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

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# Figuring Out Cost of Doing Business

Address Before Members of Toronto Association by President Legrow, of Ontario Society—Overhead Expenses on the Average Business Reckons up to 17 per cent.

**A**T a recent meeting of the Toronto Association, an address of considerable interest was delivered by President Legrow of the Ontario Society of Domestic Sanitary and Heating Engineers. His subject was an old but inexhaustible one—the question of business costs and expenses in relation to profits. The worthy president has made a special study of this problem and his remarks were right to the point. He said, in part:—

The man who periodically blows off in the exhaust pipe about living nye to die, states that money never yet has bought as good a time as a small boy can have with a crooked stick, a fish line and a can of worms. (I like these sentiments.) But I suppose that the boy would soon lose his happiness if, after fishing for some time, he caught no fish. (Natural, isn't it?)

Well here we are—grown-up boys—spending and being spent, laying waste our store, troubling ourselves about others when properly the trouble lays in us. Getting and spending, worrying and being worried, optimistic and pessimistic, thinking that progressive business methods require us to secure every job that comes on the board, at a profit if we can, below cost if we must, in order to compete and beat out our fellow craftsmen. Why is it that in our businesses we do not seem to discover the minimum at which we can profitably work? Do we take so much money for a little while and have it properly charged to our private account? Maybe we take smaller amounts from our business continually without keeping account of it so that at the end of our financial year we know how much money we owe and are owed, but for the life of us we do not know how much money we have spent.

Gather around, fellow sanitarians, and let us have a little chat about facts. Understand, the easiest thing to do is to roll down a hill, but in order to roll down you must climb up. Now are you down or up? If you are down, the only way up is to start going and, when you get up to the top, stay there.

Now for the start—We are going to spend \$1.00 this way:—

Rent .....	2c
Telephone and insurance .....	$\frac{1}{2}$ c
Printing, postage, stationery, car tickets, light .....	$\frac{1}{2}$ c
Repairs and replacing tools, cartage, defective material and break-	



President E. L. Legrow.

ages .....	1c
Losses on bad accounts and discounts given in order to make a settlement .....	1c
Bookkeeper's salary .....	4c
Proprietor's salary .....	8c
Materials purchased .....	55c
Wages purchased .....	28c
	<hr/>
	\$1.00

Now watch us very closely, the spendings of it may deceive us. We spent \$1 fairly accurately and very economically. We may have charged something for the \$1 while it was around working for us, or we may have loaned it on mortgage and received 5c. for it, but we did not do so bad; we did not hide it and feel afraid that it would be lost.

But do not forget that \$1 which we are talking about. One year has past and we are elated over the number of dollars we turned over, and now having taken stock we find that we have done a business last year of \$15,000. Not so bad for the average sanitarian. Let us try and find how it works out.

Our merchandise purchases in order to do this \$15,000 worth of business amounted to .....	\$11,000
Wages .....	4,000
	<hr/>
	\$15,000

## Overhead Expenses.

What it has cost us an uncontrollable expenditure in order to do this amount of business:—

Rent .....	\$ 300 00
Telephone .....	50 00
Insurance .....	15 00
Printing, postage and stationery .....	40 00
Car tickets .....	25 00
Light .....	12 00
Cartage .....	75 00
Repairs of tools, and replacing worn tools .....	50 00
Losses on bad accounts and credits given to settle accounts .....	100 00
Cost of material and time to replace bad material .....	50 00
Salary, bookkeeper .....	600 00
Salary, proprietor .....	1200 00
Miscellaneous .....	33 00
	<hr/>
	\$2550 00

Now you will notice that this is equal to 17c. on the dollar of \$15,000, so that for every dollar we pay in merchandise purchases and wage purchases it has cost us 17c. in order to buy this merchandise and wages and sell them again. Now then, suppose that we have a contract where the material and wages will cost \$150. In order to pay our overhead expenses it is necessary to add 17 per cent. on to the \$150, which equals \$25.50. Now then, suppose we would like a small profit on this amount of \$175.50 in order to create a capital in our business, and to have some remuneration for our time and worry outside of the small salary that we have.

Let us add on a nominal sum of 10 per cent. on to \$175.50, which makes \$175.50, or a total of \$193. So that you can readily see that in order to make a profit out of your \$150 job it is necessary to add on the 57 per cent. on the amount of \$150, plus 10 per cent., which is very small profit for doing work.

Now it does not matter what method we adopt in order to find out our overhead expenses. It is not necessary that we should employ an auditor and have an elaborate system of checking. Any one of us can write on a piece of paper what our overhead expenses are, and if we recognize the fact that we intend to stay in business and have a fair profit or a small profit on the amount of business that we do we must put on a profit over and above our overhead expenses, and the simpler the method we use the more success we likely will have.



# Methods of Sewage Disposal

By Chas. W. Chandler, Toronto.

The evils of defective and old-fashioned methods of disposing of the liquid and semi-liquid sewage wastes from isolated households, public buildings, and summer resorts in small towns and villages where by reason of its great cost a general system of sewers is not possible; are only too well known to require detailed discussion.

The most primitive method of dealing systematically with excreta is to collect the discharges directly in a vessel, which is either itself carried into the country, and its contents applied to the land, or is emptied into a more portable vessel for that purpose. In Japan, for example, in spite of the difficulty of transport over bad roads and by human labor, the latter plan is universally followed. The land and the people have in fact performed for centuries what may be called a complete cycle of operations. This plan, although carried out in the roughest manner appears to involve fewer sanitary drawbacks than might be expected; but the smells from privies and carts, and, above all from the process of emptying by ladle, are a nuisance which no Western community would tolerate.

From the experience of the writer and from information acquired by him during many years of practical work in dealing with this problem in rural towns and villages, it is an indisputable fact that the average outhouse conveniences are known to be vile, and are often maintained by people who would be very much offended if their respectability were assailed, but any person who maintains a privy vault, cesspool, or other crude method of disposing of domestic sewage without attempting to abolish such a nuisance, cannot lay claim to common decency.

Cesspool derived from the word "cease" is a "cease" pool; in other words it ceases and will not do anything. It may and does put forth a feeble effort, but nature's forces become so stultified in these ill-designed contrivances that the active natural agents of purification are completely smothered and thereby the ceasing and consequent danger. We have seen from time to time descriptions of a "septic cesspool"—one of the words, "septic," signifies action and the other word "cesspool" from the nature of its derivation stands for inaction. The logical definition of these two words conjointly used, therefore, would be "active inaction." The absurdity of such a deduction is obvious.

## NEW SERIES STARTS.

Arrangements have been made with C. W. Chandler, of Toronto, for a series of articles on methods of sewage disposal, the first of which is herewith presented. This is a subject of vital interest to the sanitary trade, particularly to those who live in districts which lack sewerage systems. Mr. Chandler has given much study to the question and in his articles will cover every phase thoroughly.—Editor.

To the summer resort visitor or those taking vacations in the country, there is something of more vital importance than verandahs with easy chairs, or shady trees and restful hammocks. Modern methods of sanitation are available, and the average farmer or summer hotel keeper is abundantly able to provide sanitary conveniences which advanced and refined habits of living demand.

The prevalence of flies in the country is a sure indication of the immediate presence and proximity of manure piles, privy vaults and cesspools which provide their feeding grounds some of the time, but the dinner table is a popular resort for them when not at the places above mentioned. D. D. Jackson's report to the Waters Pollution Committee of New York, called that body's attention to the presence of vast numbers of disease germs in the feet and legs of flies which had been caught in fly traps for the purpose of microscopical examination, and makes the statement that "the common fly is one of the most active agents in disseminating certain intestinal diseases."

The following is an extract, from an article in the Saturday Evening Post, reprinted by the Merchants' Association Committee on "Pollution of the State Waters of New York, regarding the cause and spread of typhoid fever."

"Great cities are developing some sort of sanitary conscience. Farmers and country districts have as yet little or none. Bad as our city water often is, and defective as our systems of sewage, they cannot for a moment compare in deadliness with that most unheavenly pair of twins, the shallow well and the vault privy. A more ingenious combination for the dissemination of typhoid than this precious couple could hardly have been devised. The innocent house-

holder sallies forth, and, at an appropriate distance from his cot digs two holes, one about 30 feet deep, the other about four feet. Into the shallower one he throws his excreta, while upon the surface of the ground he flings abroad his household waste from the back stoop. The gentle rain from heaven washes these various products down into the soil and percolates gradually into the deeper hole. When the interesting solution has accumulated to a sufficient depth, it is drawn up by the old oaken bucket or modern pump, and drunk. Is it any wonder that in this progressive and highly civilized country 350,000 cases of typhoid occur every year, with a death penalty of 10 per cent?"

Sewage is not purified by simply filtering through subsoil, as is erroneously surmised by many; and even the most intelligent people are led astray in this respect through faulty reasoning and incorrect information imparted by people who know little of the first principles of decay. Mason says that, "It is hopeless to depend upon the purifying influence of the intervening soil to protect the wells from privy and cesspool fouling, because soil filtration, in order to be effective, must be intermittent." With a constant flow of pollution through any soils, the purifying powers of the soil soon cease to act—an intermittent flow is absolutely necessary to admit air to the aerobic bacteria where present, if purification is to be effected. To resort therefore to the old Mosaic law of sanitation (Deuteronomy 13-23) or to dig cesspools, is contrary and quite out of keeping with the advanced sanitary conveniences within the reach of all country dwellers and they should be sufficiently wise to employ modern sanitation in their homes and enjoy the comforts common to the majority of city dwellers. To the discerning the cesspool should be taboo.

## Purification of Sewage.

For many years sanitarians and engineers have pointed out better and more rational methods of disposal, such as land treatment by means of surface irrigation or by intermittent downward filtration. A much used and quite successful modification of the latter system is the disposal known as sub-surface irrigation more frequently known as the "Waring system," because of its hav-



ing been introduced and ably advocated by the late Col. Geo. E. Waring.

Wherever suitable soil and suitably located land is available these methods of disposal are well adapted and generally with some supervision, have proved quite satisfactory. In many cases however, sufficient land is not available, and for larger buildings, such as summer hotels and institutions, the sub-surface disposal system becomes quite expensive. Under such conditions the more recent bacteriological or biological methods of sewage disposal are more adopted and promise to become universally successful. The present article is intended to explain briefly the principles of the bacterial methods and to illustrate their practical application by one or more examples. The real object of the septic tank, its general usefulness and its limitations will be pointed out. Speaking from a personal knowledge of numbers of these systems the writer is in a position to say that the septic tank system is at once the most natural, most scientific, simple and economical system in use to-day.

Before going further it might be well to call attention to the difference in composition which exists in nearly all instances between town sewage and that from isolated country houses, for this has an important bearing upon the method of treatment adopted. Sewage in general is a complex liquid varying in its volume and chemical composition at all hours. In the case of isolated houses it is slop water, plus the liquid and semi-liquid excretions from men and animals. The slop water is composed of kitchen wash water, suds from the laundry, waste water from personal ablutions, dirty water from floor scrubbing and drainage water from stables. This befouled liquid requires purification, no matter whether or not water closets are connected to the house drains. It should be mentioned here that, whatever the sewage disposal system may be, the rain water pipes from country houses should never be connected with the drain carrying the foul sewage.

Sewage from isolated buildings, when delivered at the disposal point, is generally fresh sewage, because the run of the house sewer is a short one; the sewage is apt to be more concentrated and forms a good deal more scum in the tanks. It also contains more solid organic sewage matters in suspension. Hence such sewage absolutely requires some kind of preliminary treatment in order to liquify the solids and suspended impurities, or at least to hold back the sludge which otherwise is sure to give considerable trouble.

The laity has been wrongly led to be-

lieve that the septic tank purifies sewage. The septic tank is only a primary means to the end of purifying sewage, the real purification or oxidation, which process is accomplished only by bringing sewage or tank liquids into contact with surfaces covered with the acrotic film, and in which the aerotes are kept in active condition by intermittent application of organic wastes and with air.

All forms of land disposal and purification are now known to be based upon bacteriological action. In those systems which generally go under the name of biological or bacteriological methods, we have an artificial treatment in so far as we provide suitable culture or growing places for the bacteria, and thereby increase or promote bacterial action. The purification process itself is a natural process.

The biological methods of sewage purification are based upon the fact that sewage contains numberless bacteria, most of which are not only harmless, but useful in acting upon the sewage matters in suspension as well as in solution. The really harmful bacteria or pathogenic germs in sewage are small in number, sometimes absent altogether, and found only where the bowel or other discharges from patients ill from zymotic disease such as typhoid fever or cholera go without disinfection or sterilization into the sewer.

The two classes of useful bacteria were separated by Pasteur as follows:—The anaerobic bacteria which live and grow only in absence of light and air, or derive their oxygen from decaying compounds; and the aerobic bacteria, which on the contrary require plenty of fresh air for their development.

The anaerobic bacteria act upon the organic matters in suspension in sewage by liquifying and gasefying the same; the aerobic bacteria act upon the organic matters in solution and assist the process of oxidation and nitrification.

In the case of sewage from isolated buildings, sewage treatment comprises two successive stages, namely:

(1) The removal of the polluting matters in suspension (by septic or cultivation tanks).

(2) The oxidation and nitrification of organic matters in solution (by bacterial contact beds, or land treatment).

In order to attain success the order of these two processes should never be reversed.

(To be continued.)

#### Inspector in Berlin.

Berlin, Ont.—It has been decided to appoint a sanitary inspector to look after the inspection of plumbing work in connection with his other duties. The appointment will be made on Feb. 1.

## Association Notes

A recent visitor to the office of Plumber and Steamfitter, was Harry Mahoney of Guelph. As chairman of the Legislative Committee of the Ontario Society of Domestic Sanitary and Heating Engineers, Mr. Mahoney has in hand the movement for the securing of uniform legislation to govern sanitary matters in Ontario. His visit to Toronto was partly in that connection. He states that active work toward that end will now be started and a brisk educational campaign will be carried on.

\* \* \*

The constitution and by-laws of the Ontario society have been published in booklet form, copies of which will be sent to the members. Secretary Frankland writes to Plumber and Steamfitter: "We are progressing very favorably and look forward to a big meeting on Good Friday, April 5. We are getting out application forms and intend sending them to all those engaged in the trades in Ontario."

\* \* \*

J. A. Caslake, who holds the position of chairman of arbitration of the Ontario Society, has been elected as commissioner of water and light in Collingwood.

\* \* \*

The Toronto Association have adopted the plan of holding a business dinner on the third Thursday of each month. The idea is working very successfully as it has served to bring out a larger attendance. After dinner, the members smoke and discuss business matters. It is possible that arrangements will be completed to have a series of talks on public topics at these dinners.



#### TWO PLUMBERS IN THE FIELD.

Montreal Master Plumbers are well represented in the municipal elections which take place on the first day of February. In St. Ann's Ward, Ald. Thomas O'Connell, who gives his business as Master Plumber, is running against Ex-Ald. Daniel Gallery. Mr. O'Connell has the support of the citizens' Association, his record being above reproach, while his opponent was branded as one of the notorious "23" of the old council.

In Laurier Ward, Alderman Napoleon Turcot is seeking re-election. He faces two opponents, but his record is good and his return seems likely.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, FEBRUARY 1, 1912

It is becoming increasingly apparent that the 1912 convention of the Canadian Society of Sanitary and Heating Engineers is going to break all records. The Calgary men, determined to make the convention a red letter event, have already begun preparations and they will carry out their plans with a thoroughness which makes success assured.

**Have Made Early Start** Among other ideas being put into effect is the issuing of a letter of invitation to every master plumber whose address can be obtained. This measure will result in awakening a general interest and should lead to a larger attendance than ever before.

The decision to hold an exhibition of manufacturers' goods is one which will meet with general commendation. It is recognized, however, that the step involves much hard work. The assistance of all members should be extended to the Calgary committee in carrying out the ambitious convention programme which they have undertaken.

The earnest desire of Plumber and Steamfitter to give its readers the best possible service has led to the securing of what is possibly the most practical and thorough series of articles on patterns for metal workers ever published.

**New Metal Pattern Series** The serial rights to a correspondence course in everything relating to metal working patterns by L. W. Koser, head of the sales department of the Galt Art Metal Co., have been purchased at a heavy expense. Readers of Plumber and Steamfitter can, as a result, look forward to securing much practical information during the forthcoming year.

The author of the series got his first experience in metal working with the Berger Manufacturing Co., of Canton, Ohio. He began in the shop and worked his way up to the draughting department. From there he went to the Metal Shingle & Siding Co., of Preston, where he served in the capacity of head draftsman and estimator. On first joining the Galt Art Metal Co., he occupied the same position but has since been promoted to take charge of the sales department. His experience has been, therefore, both wide and comprehensive.

The series will consist of over forty articles and will embrace practically every phase of metal work, starting with preliminary instructions as to equipment, etc. The articles will range from a delineation of the primary

principles to an explanation of the most intricate of problems and patterns. They are written plainly and clearly without being cumbered too much with technical phraseology. Each article is fully illustrated.

In presenting this series, Plumber and Steamfitter believes that it is offering the best that could be secured. Readers interested in tinning and sheet work should follow Mr. Koser's articles closely.

In New York, where people have been stirred by the number of serious fires, agitation is being made to have incinerators placed in all office buildings. In these, all rubbish will be burned daily, so that inflammable material will not accumulate.

**Incinerators Needed to Prevent Fires** The agitation might well be started in Canada as well as in New York. There have been no fatal fires for some time, but conflagrations that do great damage to property, and which might have crushed out life, have occurred with frequency. No, Canadian cities are not in a position to scoff at conditions in New York.

There are buildings which are practically secure against fire. Concrete and steel form the great part of the structure. Should a blaze break out it would be confined to the one section, and would not find enough food to create the heat necessary to twist the steel beams. But there are other buildings which are mere shells. Weekly fires occur in these. Sometimes they are discovered early and are speedily extinguished. Sometimes they get such headway that great damage is done.

Regularly it is found that the fire originated from a pile of rubbish, into which, perhaps, a cigarette end had been thrown. To prevent the fires it is necessary to prevent the presence of rubbish heaps—so the call for the incinerator. These are undoubtedly needed in many buildings in the Canadian cities. Means of securing them might well be considered by the architects' association and the Builders' Exchange.

WHEN A CANADIAN manufacturing concern can increase its yearly business by over \$450,000, it is a pretty clear indication that the country is seeing a wonderful industrial development. Canada is not just "on the eve of a great expansion," as politicians glibly state; we have passed the first stages of that expansion.

## Port Arthurites Assemble Round Festive Board--Jack Marshall Host

**P**ORT ARTHUR, ONTARIO.—Alderman-elect J. Marshall entertained the members of the Port Arthur Association of Sanitary and Heating Engineers recently.

It was a very jolly party that did ample justice to the excellent dinner provided by the worthy host, which would have satisfied the most epicurean taste. After dinner toasts were in order and were responded to as fol-



ALDERMAN JOHN MARSHALL.

lows:—"The Association," by W. B. Sime. In the course of his remarks Mr. Sime emphasized the necessity of unity and the true spirit of brotherhood that should exist among members of the fraternity, and was proud to be able to say that some of his best friends were his competitors in business. He also briefly sketched the rapid progress made in the past year or two in the face of great opposition and prejudice, first of all in getting a Master Plumber appointed to the Board of Health, then the appointment of a Plumbing Inspector and the new Plumbing By-law, the Licensing of Shops and Plumbers, and this year in the election of J. Marshall to the Aldermanic Board; and strongly urged the members not to relax their efforts,



"Joe" Barnes, who spoke on "Future Prosperity." When the little game started afterward, Joe found that the prosperity was not for him.

but to give him their strongest support in the arduous duties he has undertaken.

### A Vivid Dream.

A. C. Waltz proposed "the Ladies," prefacing his remarks by saying he hoped that the election of their brother craftsman to the City Council marked but an embryonic stage in his path upwards to the Mayoralty Chair, "A.

C." continuing, said he thought the ladies had been somewhat neglected, and most earnestly purposed amendments in the future and brought vividly to view such visions of pleasure yachts, beautiful islands and green fields in which the ladies played such a prominent part, that everyone was convinced that Andy must have a soft spot for them.

O. J. Deegan next toasted "The Sanitary and Heating Engineers." Proceedings were here interrupted by reports of the Municipal Elections coming in over the telephone and as the figures became known, congratulations were showered on the worthy host.

### Future Prosperity.

J. W. Barnes next responded to the "Future Prosperity of Port Arthur," and pointed out that the Association should seize every means in its power to further their welfare and interests,



"Andy" Waltz is always in happy vein after dinner especially if his toast is "The Ladies." He proved that he could eat, orate and ante equally well.

and suggested that the members should join the Commercial and Canadian Clubs, and by this means make themselves an acknowledged factor in the Commercial life of the City, and incidentally, train their younger members to take up those positions which they will inevitably be called upon to take as the City grows larger, thereby increasing their own efficiency and prosperity which is but a unit of the future prosperity of the City as a whole.

A toast to "The King," by the host brought the first part of a most pleasant evening to a close, after which an adjournment was made to the card room, where, it is rumored, Joe Barnes and Geo. Fisher in the face of overwhelming odds more than held their own against the onslaughts of Andy Waltz and O. Deegan, who was heard once or twice to call for a big hat to hold his chips.

## AMERICAN PLUMBERS MEET.

St. Louis, Mo.—The semi-annual three days' meeting of the National Association of Master Plumbers of the United States was held in St. Louis on January 8, 9 and 10. Legislation, which is national in scope, was discussed. The association is advocating additional public comfort stations in cities and towns throughout the United States. In addition to more comfort stations, members of the association said the stations should be kept in better condition as regards cleanliness and sanitation.

Different aspects of the state laws of the United States in regard to the laying of waste and sewer pipes and general installation of plumbing in houses and office buildings were considered at the meeting. Sanitary conditions of plumbing in public places was also discussed. The association gave out the following cold weather advice:

"Reside in a well-built house, with good plumbing.

"Keep the temperature above freezing, day and night.

"Should something freeze, don't try to remedy it yourself; send for a competent plumber.

"Not even an act of Congress will prevent water below 32 degrees from freezing.

"Don't have lamps placed near to joints and other places to keep them from freezing; a rat may knock over the lamp and set the house on fire.

"If you put a pan of water on top of the stove having a water back and if this water is frozen next morning, don't start the fire, for the back also is frozen.

"Don't let fires get too low during the night: it's poor economy.

"If you want your house cold at night turn off the water, open the draining faucet in the basement and let all the water run out. Fill the pipes again the next morning.

"Have your plumbing inspected occasionally."

The association will have its thirtieth anniversary on Monday, February 19, and the day will be observed by the 9,000 members in all sections of the country. The board formally approved the action of President Alfred C. Eynon, Canton, Ohio, in sending out the order that the evening must be spent by the master plumbers, their helpers and families in some form of amusement.

## MACHINERY IN ADDITION.

Montreal.—Warden King & Co., have just installed some new machinery in the addition which they recently made to their heating plant.





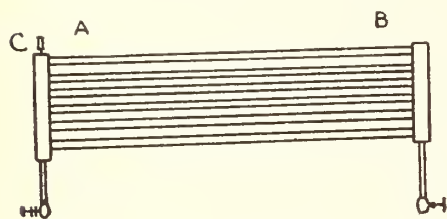
# The Question Box



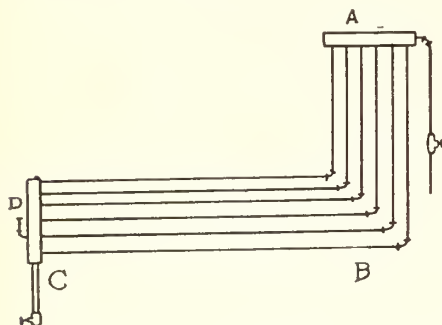
Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## STEAM COIL NOT WORKING.

Editor Plumber and Steamfitter,—I found a steam heating coil that was connected as shown by the drawing that I enclose. In Figure 1, the pipes from "A" to "B" buckled all out of shape and thus made it impossible for the coil to properly drain, causing a snapping and pounding very disagreeable.



The lower pipe was hardly ever more than lukewarm and I was greatly surprised that any fitter should, in this day, make such a connection. I enclose another drawing (shown in Figure 2) which shows the manner in which I changed the coil over to make it work successfully. It will be observed that there is "spring" enough in the coil in Figure 2, from points "A" and "B" to allow for the expansion in the coil.



This might not answer in a very long coil, but in this case it was sufficient to prevent the pipes from "B" to "C" from acquiring a hump and trapping the coil. It will also be seen that I placed the air valve (shown at point "D") lower than is generally installed. The general manner is shown at "C" in Figure 1. Placing the air valve as shown in the second figure has, I find, a much better effect in working out the

air from the coil. The valves, in this case, were both above the floor line and placed as shown as a matter of convenience.

J. E. G.

## WHAT IS AN "OFFSET?"

Editor Plumber and Steamfitter.—Will you be kind enough to give me a definition as to what an "offset" is as applied to pipe work?—Z.

An "offset" may be defined as the difference in position between any two runs of pipe. These offsets are made by bending the pipes, or by making use of 45 degree fittings and nipples or pipes of the correct length to make the "offset."

## RULE FOR AN OFFSET.

As the questioner has desired information regarding an offset it might be opportune, right here, to give him a handy rule that would, so to speak, bridge the offset for him. Here it is ready for work:

Reduce the offset to inches and then multiply by seventeen. Then divide that product by twelve. From the latter result take out whatever measure may be necessary for the fittings and the remaining measure is the length to cut the pipe for the "offset."

Most offsets in pipe work are under three feet in length and this rule will hold good in such cases.—D.C.H.

## PENETRATION OF ROOTS.

Editor Plumber and Steamfitter.—We have a line of four-inch tile running from a church to a sewer three hundred feet away, and taking the discharge from a urinal, a closet, and a water-power organ. This line was all taken up and relaid eight years ago, under the superintendence of an engineer, owing to the fact that the roots of elm trees on the church grounds had penetrated through the cement joints of the tile, and, continuing to grow, had completely blocked up the passage. The same thing has occurred again now. Can you suggest any means of preventing this, or

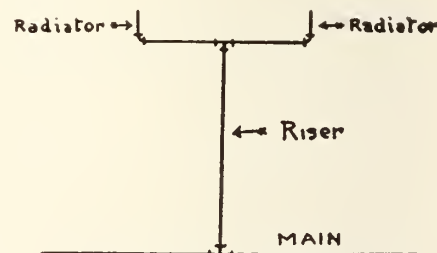
any covering for the pipe that would resist the penetration of these roots?—

A.W.A.

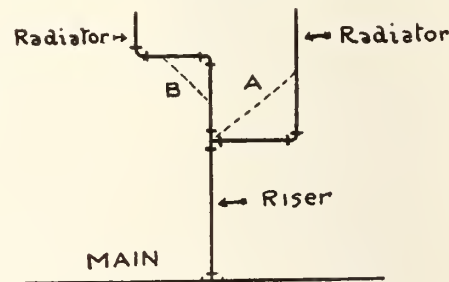
The surest way to fix this particular job would be to run cast iron pipe and make lead joints. This would practically insure the job for all time. The first cost would be more, but the instance given shows that tile and cement require repairs which would make the cost greater than that of the cast iron pipe.—D.C.H.

## A BAD "HOOK UP."

Editor Plumber and Steamfitter,—A couple of steam radiators that I have to doctor up are connected as shown you in the drawing enclosed (Figure 1). They do not work well and when the



steam pressure is on there seems to be considerable noise, especially if steam is gotten up quickly, or if one radiator is let on quickly when the other is working. Will you take the matter up and give me a drawing and show how the



radiators should be connected to work to better advantage?

L. M. Hempstead.

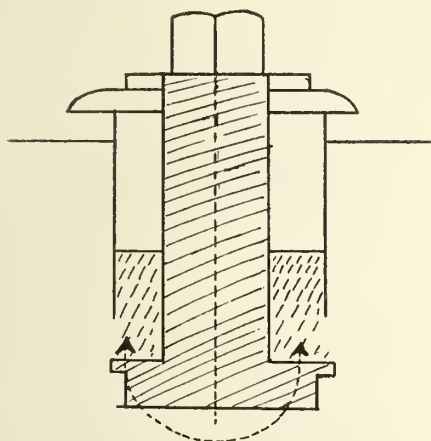
The radiators should not be connected by pipes that are taken out of a "tee" which has been used "bull-head-

edly" in more senses than one, as shown in Figure 1. A better way of doing this is suggested in Figure 2, by means of which the steam will go to each radiator in a much easier manner, and we believe the noise you mention will be eliminated.

At the same time, a more meehanical job would result if the connections were made by the use of 45 degree fittings, as suggested by the dotted lines, "A" and "B" which appear in Figure 2. Many fitters prefer the latter method and some object, perhaps because the use of 45 degree fittings requires some degree of figuring—or measuring quite accurately.—D. C. H.

### HYDRANTS FREEZING.

Editor Plumber and Steamfitter.—Having seen some very useful answers to questions in Plumber and Steamfitter, I am writing to know if you could give me a little information in keeping the



top of fire hydrants in the streets from freezing during the winter months. The part that freezes is packed with greasy hemp. Also the best place to tap a water main, as we have had trouble with goose necks breaking. Have enclosed sketch of the way we have been doing

the dirt on it in any old way as is frequently done. Regarding the question of packing the fire hydrant, I am unable to offer any suggestion better than the one afforded, as I have never lived in that extreme cold climate.

Can any reader give the required information?—D.C.H.

### WHY NOT USE LEAD PIPES?

Editor Plumber and Steamfitter.—In former times the range boiler and water front used to be connected together by lead pipe, which, seems to me, could be swung into shape much easier than iron pipe. Why is it not used more to-day?

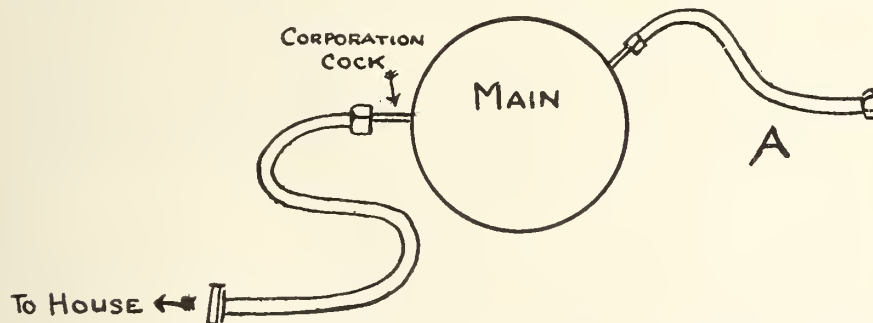
—M.R.J.

We are informed by one who has put in both kinds of pipe that, while the lead pipe is handled easily enough, it does not answer as well as iron pipe for the use of hot water from the reason that its expansion is unequal. To be more explicit, it will expand quite readily, but when the cooling act takes place it does not then contract to the same extent that it has previously expanded. In a case of constant heating and cooling it is stated by our friend that humps, sags and ruptures were eventually produced which were not possible with iron pipe, and so, for this reason, not much lead pipe is used, to-day, in connecting up the water front and the range boiler, save in localities where the chemical nature of the water is such that iron pipe could not be used.—D.C.H.

### KITCHEN TRAP NEEDS CLEANING.

Editor Plumber and Steamfitter.—Can you give me a tip on cleaning out the trap to the kitchen sink, when it becomes stopped up and the plumber can't or won't come and do the job. A sort of "first aid to the injured?"—Reader.

A strong solution of lye, or sal-soda



these things. Hoping to see the answer in Plumber and Steamfitter.—A.F.B.

Should make the tapping between the top and side as shown by "A" in the drawing and give about the bend to the pipe as illustrated, supporting the pipe by careful filling and not throwing in

run into the trap should eat into the grease so that, by using plenty of hot water, the trap and pipe could be cleaned out. If this does not do the work a force pump may be used. They are inexpensive and are a mighty handy article to have around the premises.—D.C.H.

### FLOW OF GAS.

Editor Plumber and Steamfitter.—Will you kindly give some data re flow of gas in pipes of the following sizes, 3/4 inches, 1 inch, and 1 1/4 inch per hour?

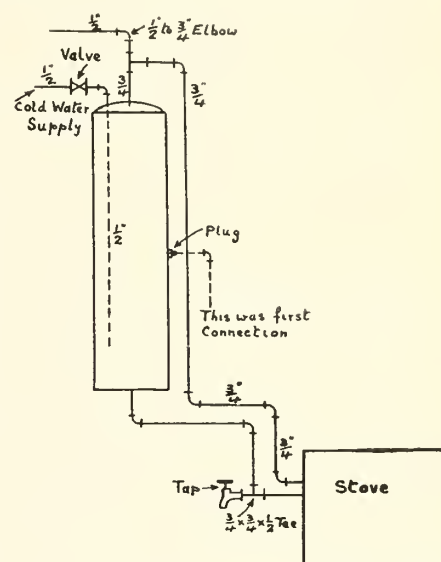
Toronto, Jan. 18.

T. Derry.

The amount of gas flowing through the pipes would be plainly indicated by the gas meter. It is estimated that one gas burner or jet will consume about five feet of gas per hour.—D.C.H.

### HEATING WATER IN BOILER.

Editor Plumber and Steamfitter.—We were recently called to investigate a 30 gallon hot water boiler in a bathroom upstairs, connected to a range in the kitchen below. The system was not



working satisfactorily, it being impossible to heat the water in the boiler.

We first examined the pipe line thoroughly to see if the water was trapped at any point, but found nothing of this kind. The distance from stove to boiler is approximately twenty feet and return. We shortened this distance to about eighteen feet by substituting 45 degree elbows for square elbows. Thinking that the waterfront might possibly be plugged or partially obstructed, we removed it and put in a new and perfectly clear one. We also saw to it that the stove should stand perfectly level on the floor. All these changes did not alter the heating of the water in the boiler in the least.

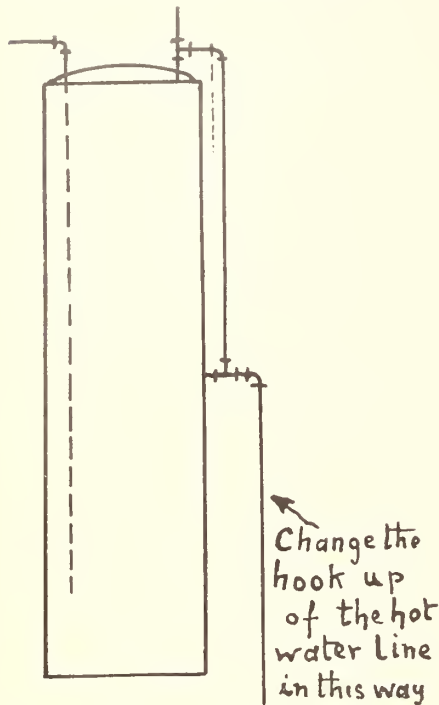
We next cut out the side connection, and carried this to the top of the boiler, as per sketch enclosed. This heated the water in the top of the boiler slightly, but not by any means as hot as required for domestic purposes.

We then disconnected boiler and examined the interior of same, looking for



an obstruction of some kind there, but found none, at the same time examining the whole of the pipe line, and finding it quite clear.

We have connected many of these same stoves in the past, to boilers and radiators, and sometimes to both at the same time, with excellent results.



Any information that you can give us in this matter will be greatly appreciated. We enclose stamped and addressed envelope for reply.—A.W.A.

In the accompanying sketch we give what we believe would have been the proper solution of this problem.—D.C.H.

#### COMPARISONS IN CONSUMPTION.

Editor Plumber and Steamfitter.—Will you give me some idea in regard to the difference in the consumption of fuel between steam, a hot air furnace and hot water heating, and oblige.—C.D.E.

Conditions in installation differ; also locations and people. In treating this question we will give our personal observations, only, without regard to other figures. We can say that, space for space, if the hot air furnace was properly installed and looked after, we believe that it would burn more fuel than either a steam or hot water job large enough to do the same work. Neither hot air furnaces nor steam jobs are always rightly installed, hence we hear so many objections as to the amount of coal, or other fuel, consumed. More knowledge is required than the mere opening of the fire pot door and throwing in the fuel to run these jobs. Com-

ing closer to the mark, certain classes of buildings require certain ways of heating. The right class of a job in the right place, if attended to with any degree of care, will generally give satisfactory results if it has been installed by a conscientious fitter. As to a direct comparison, job for job, size for size, in consumption between steam and hot water, it has been our experience that the vacuum system of steam heating will use less fuel than hot water to do the same work in a satisfactory manner.—D.C.H.

#### TO FIND SIZE OF MAIN.

Editor Plumber and Steamfitter.—Please state a rule for finding the size of a steam main.—Starter.

We believe that the following rule has been made use of with satisfactory results although many fitters have rules of their own for this purpose.

Rule.—“To find the approximate size of the steam main and risers, figure one square inch area in cross section of main for each one hundred square feet of radiation.”—D.C.H.

#### INGENIOUS REPAIR METHOD.

An ingenious method of repairing a burst water supply pipe is explained in Metal Worker. The method was devised by an old carpenter when a pipe had to be repaired at a time when the services of a plumber could not be obtained.

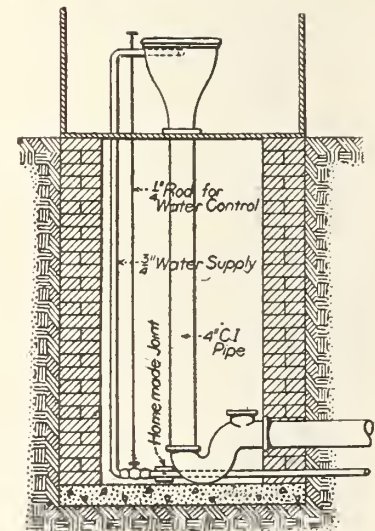
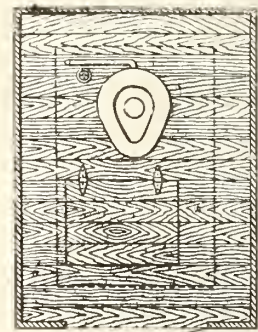
As will be seen in the accompanying illustration, the leak was caused by a burst in the  $\frac{3}{4}$ -in. water supply leading to a hopper closet in the rear yard. The burst was caused by the pipe freezing on a cold Saturday night. Being more or less a “jack-of-all-trades,” the old carpenter improvised the following scheme of repairing the leak which, it might be stated, was done over 12 years ago and is still water tight.

The space in the closet pit in which to work was so small that he enlisted the services of a boy fourteen years old, who entered the pit at the trap door shown in the illustration and who was to follow the instructions given him by the carpenter.

After the water supply had been shut off the pipe was gently tapped together and was then scraped clean. Candle grease was spread over the pipe to keep the spot from gathering dirt and the like. An empty vegetable can was secured and after both ends were cut away it was slit from end to end, making it resemble a sleeve which was to fit over the pipe. The carpenter then procured

a piece of  $\frac{3}{4}$  in. pipe, the same size as that in the pit. To this he fitted the can and then cut two blocks of wood from a maple plank. These pieces were bevelled at the ends to make a snug fit after being cut across the pipe opening so that each would fit one end of the can. When these parts had been fitted above the ground the boy was again sent into the closet pit and by the aid of a candle and instructions from his “boss” and the assistance of a few wires and wire brads he fastened the can and the wooden ends securely together and soon had the can placed in position over the pipe where the leak was.

The inside of the can and the wood ends had previously been well greased and a small hole was punched in the top of the can to one end so as not to be directly over the hole in the pipe. Into



this hole was poured molten lead heated in a pot on the coals of the kitchen range.

The view of the job here shown will serve to give a better idea of the manner in which the carpenter did his work. Of course no plumber would think of making such a joint; still the idea conceived by the carpenter and put to the test served its purposes when the plumber was not at hand to do the proper work.—Metal Worker.

# Planning Large Manufacturers' Exhibit

The following is a draft of the letter sent from Calgary to the manufacturers of sanitary and heating appliances and to supply men, with reference to the exhibition of the 1912 convention. Copies are being sent to all firms in these lines.

Calgary, January 2nd, 1912.

Gentlemen:—

As you are doubtless aware, the 17th Annual Convention of the Sanadian Society of Sanitary and Heating Engineers, will be held in Calgary during 1912, and the dates fixed for this event are July 18th to 25th inclusive.

These conventions have been productive of great good to the Sanitary and Heating fraternity throughout the Dominion and have resulted in a large measure in the advancing of our crafts.

One of the great primary objects of these conventions is to endeavor to educate the sanitary or heating engineer along the lines of installing first-class work in a first-class manner, and one of the essentials towards this education is the creating of a demand by the public for first-class plumbing fixtures and the very best and latest in the heating and ventilating lines.

This is a question that touches the manufacturer and wholesaler very closely; the creating of such a demand meaning the elimination to a large extent of the cheap plumbing fixture or heating system and the consequent increase in the output of high-grade goods by the manufacturer; which in turn affects the wholesaler to his very great advantage.

As a first step towards this very desirable state of affairs, it has been decided by the Calgary Association of Sanitary and Heating Engineers to make this convention, if possible, a red letter one in the annals of the craft in Canada; and utilize the gathering together of representative sanitary and heating engineers from all points in the Dominion, towards the above education: not only of the master plumber or fitter, but of the public at large and more particularly the architects; the last of whom have to a great extent the power to start this movement in regard to the creating of a demand for better and higher grade fixtures and systems.

Our desire is to have an exhibition of the very latest and best goods manufactured, together with such specialties as touch on our trades; this exhibi-

tion to be open at all times during the convention to the general public; the representatives of the exhibitors to be on hand to give practical demonstrations of their lines, so that the public will be able to judge for themselves as to the advantages to be obtained by the installing of first-class and up-to-date sanitary and heating appliances.

We intend to have a special day for the demonstration of these exhibits (outside of the general demonstrations) when the architects will be particularly invited to attend, and the general public will have a chance to see sanitary and heating systems in actual operation under the hands of experts, as on that day the sanitary and heating engineers present at the convention will give all the assistance in their power in the demonstrations.

The manufacturers and wholesalers will, by utilizing this opportunity, not only help to create a demand for the class of goods that they wish to see installed, but will also be able to show the sanitary and heating engineers of Canada the advantages to be obtained from specializing in their work, and endeavoring to convince their customers in all parts of the Dominion that it is true economy to have the very best obtainable, when plumbing or heating their residences or buildings.

It is our intention to make this exhibition as complete as possible, and in order to do this, all exhibits shown will have the opportunity of being demonstrated in actual operation, the building used for the purpose having both water and sewer connections and other necessities for the purpose.

For the exhibits of heating appliances, steam will be at the command of the exhibitors should they so desire, and systems can be installed and shown in operation. Exhibitors of heating appliances, are requested when applying for space to say whether they desire steam, and if so how much.

For other manufactured articles, such as pipe, fittings, tools, covering, etc., while these may not be of quite so great an interest to the general public; still first-class installations of first-class fixtures, means necessarily first-class fittings, tools, etc., to make a success of first-class installation.

Therefore, exhibits of this kind will be of great interest to the delegates assembled, and will result in great and lasting good to the manufacturers of

these lines. Pipe will be on hand to use in demonstrations of tools, etc.

The setting up of exhibits will be reduced to the minimum of cost to the exhibitor, as the Calgary A.S. & H.E. will detail men to assist in the installations free; and no charge will be made for space, water, sewer, or power, these items being all borne by us.

As there is a large field open in Calgary and district for both plumbing and heating goods, it is very doubtful if very many of the exhibitors will have to take their exhibits away again, as a good practical demonstration might result in sales on the spot that will more than pay for the time and trouble involved.

Should you desire to take advantage of this opportunity to demonstrate any of the lines you specialize in, kindly let us know, stating what you wish to exhibit, the size space required, and whether you wish to have exhibit shown in actual operation.

As we wish to get all these matters arranged for, allot space, etc., kindly advise us at your earliest moment so that everything can be attended to at this end without the necessity of waiting till the last moment and then rushing things through in an unsatisfactory manner.

Should you desire any further information, same will be cheerfully supplied by the undersigned on application.

Trusting to have you with us during the Convention, I am

Yours truly,

F. A. McVeigh,

## A STRIKING WINDOW.

In a large inland town I saw an attractive window dressing.

There was a table and two chairs, a model swing, and several other articles composed almost entirely from iron pipe. All were nicely bronzed and, being carefully made, they looked fine. A nice assortment of taps, valves, etc., was laid out upon the table, a large placard over all was worded somewhat as follows:

"We are extraordinary mechanics.

"We will do your plumbing, steam, hot water or gas fitting in just as nice a style as we have made this furniture.

"Our prices are as low as those charged by ordinary mechanics.

"We do claim to be the champion pipe fitters.

"Just Try Us."



# Siphonage or Blowing Out of Trap Seals

An Article on Plumbing in Modern Office Buildings—Some Interesting Facts  
Re Air Currents Supplied by Inspector in City of Sky-scrappers.

THOMAS J. CLAFFY, Assistant Chief Sanitary Inspector of Chicago, writes in "Domestic Engineering" as follows:

During the summer of 1910 I was requested to look over the plumbing in one of our modern office-buildings to assist in determining the cause of nuisance which had annoyed the tenants and managers since its erection about five years previous. When the main toilet-room on the top floor was in heaviest use, the trap-seals on all floors below were either siphoned or blown out.

There was trouble from the time of its complete occupancy and several plumbers had given up as useless any efforts to improve conditions.

The toilet-rooms for all office employees were on the 18th floor.

In the men's room 22 water-closets, 6 urinals, 3 lavatories and a slop sink; and in the women's room, adjoining, an equal number of closets and lavatories, were connected to a soil-pipe. Each fixture-trap was revented and the vents extended through the roof at different places as indicated on the plan.

On the 17th floor a water closet, lavatory, bath tub and shower bath were connected to the same soil pipe with a revent connection from each fixture to a main vent. Below this a lavatory on each floor to the 4th was connected in like manner. On the 4th floor two lavatories, four water closets and a slop-sink were connected to the same soil-pipe with revents connected as indicated.

In the course of our examination it was found that the main soil pipe was 6 in. and the vent 3 in. and each fixture trap was individually revented and the pipes above the roof were clear. The soil pipe was carried along the ceiling of the basement and dropped down about 6 ft. to the point where it passed out to the street sewer.

A relief vent had been taken off the line near the ceiling and extended outside the building, terminating in a return bend close to the wall and sidewalk. Its only function seemed to be deluging with sewage the passing public and it was promptly plugged.

Our first impression was that an obstruction existed somewhere in either the soil or vent-pipe. A small electric light was let down the vent-pipe to the ceiling of the second floor, showing that this line was clear. We then dropped a line down the soil pipe, with like results. The next step was to break a fitting out of the revent line on the 15th floor, which demonstrated that there were no obstructions at that point. A plumber who had been called in to stop the nuisance had extended an independent 4-in. line from the basement ceiling, inserting a back-water valve as shown in Fig. 2 to the fourth floor, and connected the fixtures to it. This stopped all trouble on the fourth floor, but only served to increase it on the floors above.

It was impossible to reconnect the 3-in. main vent to the 6-in. soil pipe near

its base on account of its inaccessibility and the necessity of closing the toilet room for any part of a business day. Even this would not have provided the desired relief, as was afterwards demonstrated.

How to give relief and at the same time avoid unnecessary tearing out of walls and fixtures and shutting down the main toilet room during business hours, was indeed a most perplexing problem. It offered no small amount of study.

The fifteenth floor offered the most desirable point for access to the waste and vent-lines in the wall. The fixture-trap was removed and a tee inserted between it and the vent fitting, Fig. 2. A piece of 1½-in. pipe was extended up about 5 ft. with a McClellan vent on the top. This showed agitation of the mercury seal at all times, and an unusual agitation during periods of heavy use of the main toilet room. It failed at such times to prevent loss of water-seal, though it afforded relief during moderate use of fixtures above or below.

The water-closet on the 17th floor was taken up and observations made from there. The alternate inrush and outrush of air immediately blew out any light or broke any paper pasted over the orifice. The water-seal in the trap of the shower bath oscillated as usual, but was not blown out or siphoned.

There was no perceptible change in the fluctuations of the McClellan vent on the 15th floor nor any difference in

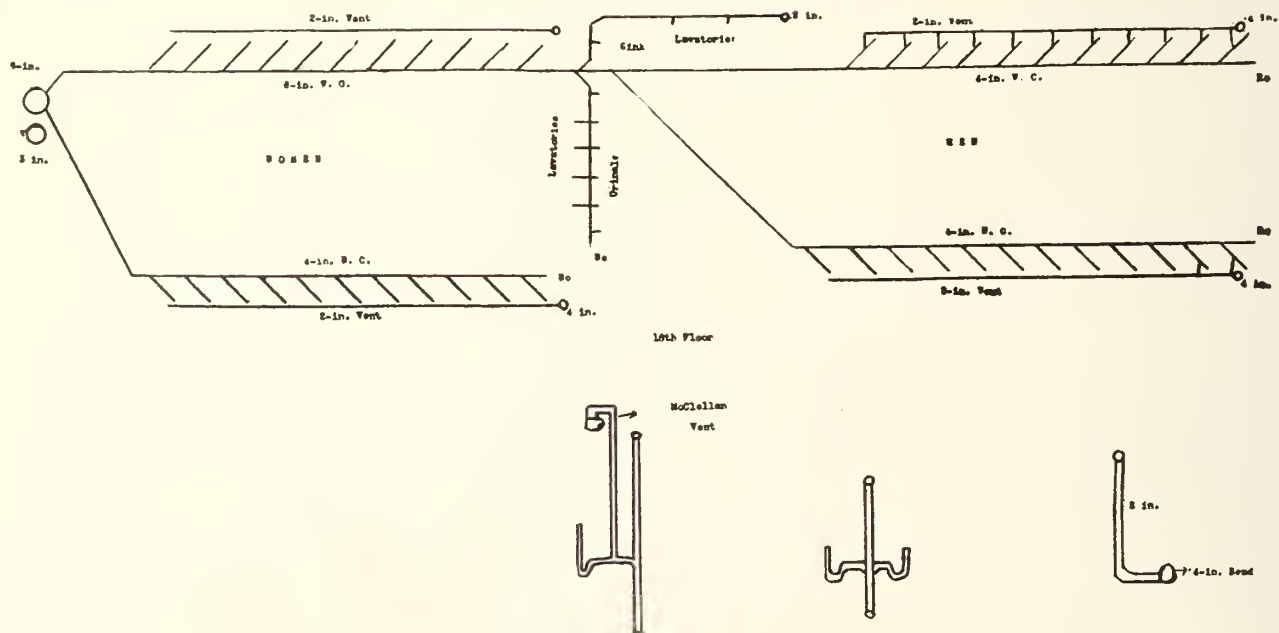


Figure 1

safety of trapped fixtures below this point, which siphoned or "blew out" just the same. This was proof of the great air compression within the lines of piping and of the impossibility of solving the problem by extending relief-vents from so high a point.

The removal of the McClellan vent on the 15th floor leaving a 1½-in., opening in the vent and waste made no noticeable difference on floors above or

They finally found a 6 x 4-in. 90-deg.-Y plugged. It was left so and wainscot and floor set back in place, to wait for a convenient Saturday night and Sunday when the real work of installing proper relief-vents could be carried on.

It was found impossible to run a pipe even 2-in. in diameter up alongside the soil and vent-stacks, so after what seemed an endless amount of heart-breaking

Measurements were taken, the way prepared, and the 4-in. relief-vent from the fourth floor to the roof finally installed. It was noticed that as its height increased, its efficiency diminished. There was more agitation or oscillation of the trap when it was finally extended to the roof than when it had reached only to the sixth floor, though it really solved the problem by preventing loss of trap-seal.

In making the connection to the soil-pipe, care was exercised in preventing use of any of the fixtures above. When the extension reached the sixth floor, the plug was removed and the fixtures discharged in the main toilet room.

When the discharge approached the volume of a rush hour service, the spray carried by the compressed air wet the hand placed over the open vent. It seems incredible that so much compression could be obtained in any ordinary soil-pipe, but experience has demonstrated it.

Several weeks after the completion of the relief-vent installation, measurements of the air-velocity at the roof were taken.

An ordinary derby hat when placed over the open 4-in. relief-vent was blown off by the outrush of air. An anemometer placed over it showed a velocity of 1,600 ft. per minute during a period of only ordinary use of the toilet rooms. This would easily reach 2,000 ft. during rush hours or heavy use.

The air currents in the 6-in. soil and 3-in. vent-pipes were not steady, reversing themselves several times in a minute and showed a velocity from 0 to 100 ft. per minute in the 6-in. and 40 ft. per minute in the 3-in. lines.

The test of air currents could not be carried on satisfactorily on account of the inclemency of the weather and the lack of proper facilities.

By plugging the 4-in. relief-vent, the speed of air currents in the 6-in. soil-line was increased to 250 ft. per minute and to 240 ft. per minute in the 3-in. line. An actual indication of the speed could be obtained with an anemometer on each of the lines at the same time.

It is to be regretted that more accurate measurements could not be taken, and closer study of air currents made. Many things have to be arranged to suit the convenience of building management, occupants and investigators, and so we had to be satisfied with what we could get.

Since the inception of this case we have sought the experiences of others and have found them but repetitions of our own, though the degree of compression was less and the means of inserting relief-vents simple.

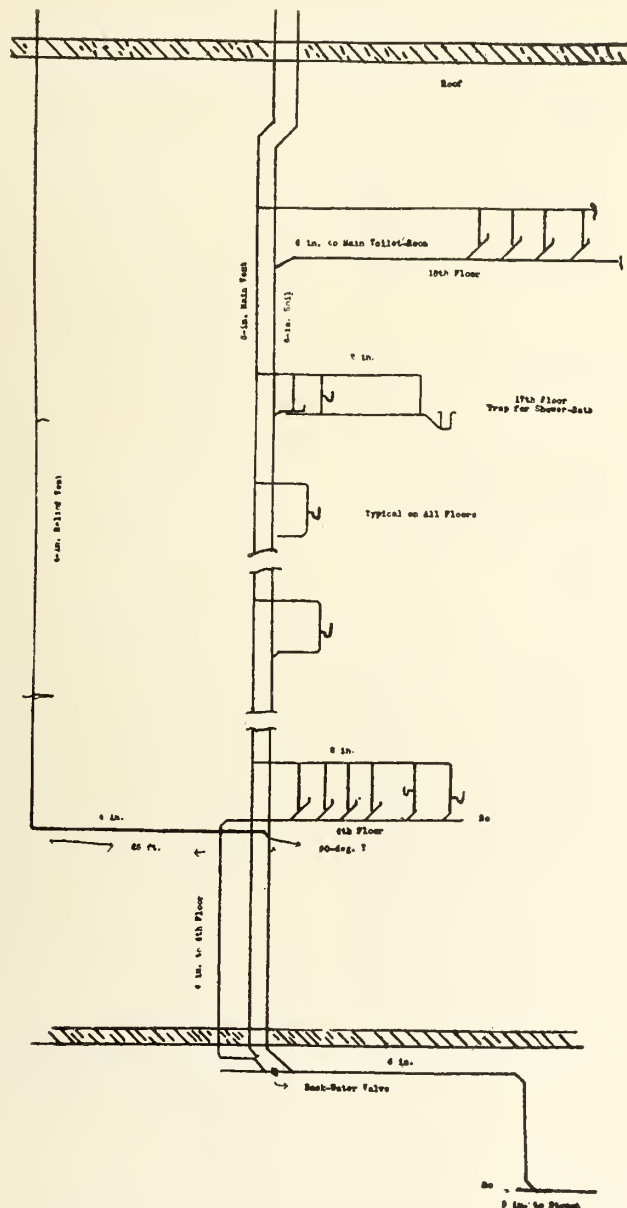


Figure 2.

below, while, of course, protecting the trap-seal at this point.

We were now convinced that relief must be provided nearer the base of the soil-pipe, and with as large a pipe as could be installed.

During a lull in the business activities on the third and fourth floors, plumbers were put to work locating the tee-fitting from which the toilet room fixtures had been disconnected.

delays, a pipe-shaft nearly 50 ft. away was found suitable for carrying a vent to the roof.

Before measurements were taken, experiments were made with 2, 3 and 4-in. pipes connected to the 90-deg.-Y at the fourth floor. With a 2-in. pipe the relief was scarcely noticeable; the 3-in. pipe was better, and a 4-in. pipe prevented loss of trap-seal, though it did not prevent agitation.



# Emphasize Accessories to Draw Trade

A Montreal Department Store Shows How This May be Done—Plumbers all Over the Country Might Profit by the Example, not Only Increasing Their Store Business, But Establishing a Connection Which Will Mean More Repairing and More Installing Work—This Class of Advertising Possible in the Towns as Well as the Cities—Experience Has Shown This.

"We haven't any lines to advertise or to show in the window. We just have the staples that every one needs and that every one knows where to get."

This plaint of a certain class of master plumber is often made. They feel the need of some regular shop business, to supplement their earnings for installation and repair work, but how to bring people to their store, and how to sell them goods, seems a problem which many are unable to solve. They take it for granted that people know what they carry. The little accessories, the bathroom fittings which are in such great demand, they seem to regard as of little value.

## Where the Dealer Loses.

Some dealers there are who do not handle these accessories at all. If they have a shop which would enable them to carry these lines, they are losing by their unaggressiveness. Not only are they losing the profit which is to be secured from the sale of these articles, but they are losing also that connection which is established by getting people to a store to make purchases. When something goes wrong with furnace or plumbing, the householder naturally thinks of the Sanitary and Heating Engineer from whom he has bought those bathroom fittings. It is that man who gets the repair business. It is also that man who is likely to get the work of installing a new system, should one be required.

## A Purposeful Ad.

What use can be made out of these bathroom accessories, is well shown by an advertisement which has recently appeared in the Montreal daily papers. It is a department store which thus presented its goods, but the same line of procedure might have been adopted by scores of plumbers whose places of business are on the crowded thoroughfares.

Notice in the reproduction of this ad. the attractive way in which the goods on sale are brought to the attention of the reading public. Of course, it was a special sale, for which the advertising was prepared, as is shown by the line, "At Prices For To-day Only." But the same ad. might have been used for almost any day, with prices, perhaps, a little different.

There is a cut of the glass shelf which

could be used for holding tooth brushes, shaving tackle, and similar articles. How that would appeal to the housewife, and how it would also appeal to the husband, who likes to shave in the bath-room where he is at the source of supply of the hot water. The price, from \$1.19 to \$1.75, seems remarkably low for the benefit which will be received. Thoughts of bathrooms in which such shelves have been seen come to the mind of the reader. It is not hard to see how sales are secured.

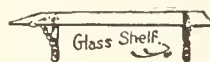
## Prices Plainly Shown.

Then the tumbler holder is illustrated, and a description of it, with prices.

## Bathroom Fixtures

### At Prices for Today Only.

ALL FIXTURES ARE COMPLETE WITH SCREWS.	
TOWEL BARS, 1/4-inch Brass Bars, Nickel Plated, complete with screws, 18, 24 and 30 inches long. Regular, .46 to .75. Today.....	.39
TOWEL BARS, 5-16 inch Brass Bars, Nickel Plated, 9, 12 and 16 inches long. Regular, .25 and .30. Today.....	.19
TOWEL BARS, 5-16 inch Nickel Plated Steel Bars, 19 inches long. Today, each.....	.10
GLASS TOWEL BARS, 1/4-inch Annealed Glass Bars, with Nickel Plated Cast Brass Brackets, 16, 18, 21 and 24 inches long. Regular, .75 to \$1.00. Today.....	.55
GLASS TOWEL BARS, 1 inch diameter, Cast Brass Nickel Plated Brackets, 18, 24 and 30 inches long. Regular, \$2.00, \$2.25 and \$2.50. Today.....	\$1.75
GLASS SHELVES, 6 inches wide, heavy plate glass shelf and nickel plated brass brackets, 16, 18, 21, 24 and 30 inches long. Today's Prices are: For 16-inch size, .94; 18-inch size, \$1.19; 20-inch size, \$1.25; 24-inch size, \$1.45; 30-inch, \$1.75 complete.	
TUMBLER HOLDERS, brass, nickel plated. Today.....	.35
TUMBLER & TOOTH BRUSH HOLDERS, Combined. Today.....	.45
TUMBLER HOLDER & SOAP DISH, Combined. Today.....	.75
BATH SEATS, White Enamelled, Rubber Covered Steel Ends, adjustable sizes. Today.....	.69
TOILET PAPER HOLDERS, neat, nickel plated brass plate and ebony joint, wood bar. Today.....	.23



Advertisement, used by a Montreal Department Store, to effect the sale of Bathroom Fixtures.

concisely given. That, too, would appeal to all. To have a tumbler handy is a comfort at many times. Sales will be secured.

The towel bars, too, are brought prominently to the attention of the reader, though these are not illustrated. They too, are a convenience. Then, there is an illustration of a bath seat, such as is of especial value where the bath is of small size. Prices are given here, too. That is a good point. Prices give people confidence. They will come to buy when

they have some idea what they will have to spend.

One other feature about this particular ad. is worthy of notice. It is the line near the top. "All fixtures are complete with screws." A simple statement that, but it indicates that the work of putting the fixtures in place will be simple also.

Many men handling plumbing goods, now carry such accessories as are brought before the people in this ad. But few make the most of them. They do not use them to draw trade.

"But," will say some men, "we could not advertise like that. It would cost too much."

## How About the Small Town.

"I do business in a small town," another may say, "I could not get much trade in this line."

Perhaps the small dealer in the big city would not carry on a newspaper advertising campaign. But at least he might arrange an attractive window display of these goods. Others have done that, and have secured splendid results.

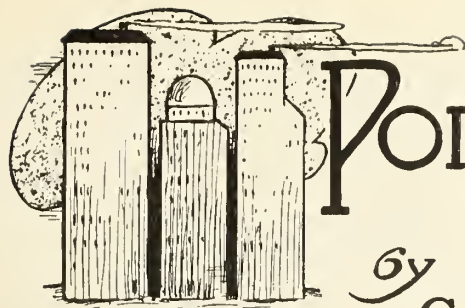
In the small places, on the other hand, a live dealer should be able to get a fine trade in these lines. Some men have done so, and they have done so by bringing the goods before the people. Advertising is not expensive in the towns. Moreover, practically every one in the district will see the ad., and will think of the goods brought to their attention. A good newspaper advertisement, backed by a good stock and attractive window trim, should bring big business in the smaller places. Some of these have been practically neglected as far as this class of goods is concerned.

## OPEN WESTERN BRANCHES.

Owing to increased business in the West the Garlock Packing Co., of Hamilton, Ont., have opened up branches in Winnipeg and Vancouver, where a complete stock of Garlock Packings and Mill supplies will be carried.

The Winnipeg branch is located at 117 Market street, with W. J. Usher, as Western manager, to the mountains. With Mr. Usher are associated B. E. Dalzel and E. C. Medland.

The Vancouver branch is under the management of Arthur R. Bell, who will be assisted by George Cook.



# POINTS ON HEATING By CHAS. H. DENISON



## Chapter 23.

### Coils and Coil Building.

The great advancement made in the construction and efficiency of radiators in the past few years, has, to a large extent, done away with one of the practical parts of steam heating, viz., steam coils and coil building.

To a large extent wall radiation has driven the coils to one side, except in factories, tunnels, pits and some other places where the looks of a coil seems to cut no figure at all.

One can easily remember, a few years ago, that no residence was thought to be properly warmed unless it had a coil stowed away somewhere in the hall where it snapped and crackled quite cheerfully every time the steam passed through it.

Going a little further back, many of the radiators were made of pipes screwed into a case and with an ornamental top that sometimes fitted and then again sometimes did not. The apprentice who learns his trade in the shop of to-day will probably have a limited opportunity of acquiring knowledge of coil building, and so we present a few remarks upon the subject.

### Different Coil Forms.

There are several different forms in coils, such as the "Harp" coil, the corner coil, the return bend coil and the return branch tee coil.

Some other combinations might be mentioned, but those given seem to be the most common. Before proceeding any further two points requiring consideration might be touched upon at this time. They are expansion and radiation.

### Table of Radiation.

In building the coil, it will be necessary to know the amount of radiation that a certain length and number of pipes or sizes of pipe will afford. For convenience this radiation will be given on a basis of ten square feet of radiation and the table (up to and including 2-inch) is here published:

10 square feet of radiation, 1-in. pipe,  
= 28 feet in length.  
10 square feet of radiation, 1¼-in. pipe,  
= 24 feet in length.

10 square feet of radiation, 1½-in. pipe,  
= 20 feet in length.

10 square feet of radiation, 2-in. pipe,  
= 16 feet in length.

From which figures one should be able to rightly estimate, with little trouble the amount of radiation and size of the coil required to perform any certain amount of work.

### Coil Expansion.

The expansion will differ somewhat, according to the temperature of steam maintained in the coil, and in coil building, provision must be made for this expansion, or leaks and "humped" pipes will be the result. We find that at

215 degrees the pipe expands 1.47 in.  
265 degrees the pipe expands 1.78 in.  
297 degrees the pipe expands 2.12 in.

These expansions are based on a coil that is one hundred feet in length.

In a small coil, say ten or twelve feet long, these expansions would hardly be taken into consideration, but in a case where coils are run along the side of some big factory and are anywhere from two to six hundred feet in length, one can very easily see what would happen if proper provision for the expansion were not made.

The writer has observed coils in some instances where the expansion was more than twelve inches.

### Some Practical Hints.

In fitting up a factory or large institution where most of the heating is to be done by means of coils, a large amount of time and labor can be saved if certain observances be followed. If the pipe has been scattered in bunches throughout the building several light work benches should be provided so that they can be easily moved to the vicinity where the fitters are temporarily operating, thus saving much travel to the pipe vise. If the pipe is all to be worked up in the tool house, after it has been gone over, the laborers can distribute it to its proper place.

I speak of working over the pipe in the sense of removing the pipe coupling from the end of the pipe upon which it

is delivered and then placing it, with the tried side of the coupling out, upon the opposite end of the pipe and screwing the coupling "home." This gives one a length of pipe with a proven thread at each end of the length of pipe which is then all ready to be made into the coil without further trouble. If the pipe is not gone over in this manner, all sorts of trouble will follow when the fitter gets busy. Loose and split pipe couplings, bruised threads and split pipe, and when the steam is turned into such a poorly made coil any number of leaks will be the result. If a coil is used for the purpose of overhead heating, it will probably be swung from home made hangers. Generally two pipe hangers--possibly one inch--and pieces of one inch pipe supporting the coil pipes. Perhaps a larger pipe may be slipped over the supporting pipe between the hangers in order to give greater freedom for the movement of the coil pipes.

Supported at the side of the building, the coil may be held by hook plates, ring plates or expansion plates as may be specified. In an uncompleted building where there are neither floors nor ceiling to get a guide or grade by for a starter in measuring, it is a rather difficult thing to get started right. Guess work won't do, and plumb lines or tapes are apt to sag, thus making wrong locations for the hangers which will result in trapped sections of the coil. An expedient the writer once observed in such a case, was the services of a surveyor who ran the lines correctly for about twenty large coils and everything came out all right. Previous to that several fitters had attempted to lay out the work, but not one had succeeded in lining up a coil untrapped.

In screwing up the pipes, as they lay in the pipe plates, the old-fashioned pipe tongs will be found to be the very handiest of tools. Chain wrenches and other wrenches are a nuisance and getting constantly stuck while the discarded (?) pipe tongs run an easy first. A fitter and helper with these tongs can run in a large stack of pipe in the course of one day.

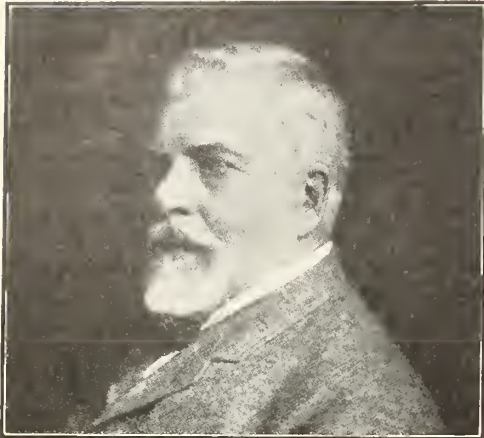
(To be continued.)



## DEATH OF RICHARD CRANE.

The death occurred on January 8, of Richard T. Crane, head of the well-known brass firm of Crane Co. He was a figure of international fame, known all over America as the "ironmaster." An authority on all matters pertaining to the brass industry, a writer of some repute and an avowed enemy of higher education, he became one of the best known manufacturers in the country.

The late Richard Crane was born in



The Late Richard T. Crane.

Paterson, N.J., of poor parentage. He left school at the age of seven years and when 15 years old he took his first position in a brass foundry. In 1855 he opened a small brass shop of his own in Chicago. It is stated that, during these early days, he slept in the loft over his shop. From this humble start, he built up the great business which now bears his name.

In 1900, Mr. Crane began a profit-sharing plan on a basis of 10 per cent. of the annual earnings of each workman. On this basis over \$3,000,000 has been distributed among the employees of the Crane Co.

He was an earnest advocate of manual training schools, and is recognized as having been the moving spirit in the founding of the technical schools in Chicago. In furtherance of this work he spent over \$100,000.

## Must Put Up A Big Deposit

Vancouver, B.C., Jan. 25.—Not for a long time have so many journeyman plumbers been offering. About fifty are out of work at present, taking what crops up from day to day. Perhaps the main reason of this is the snow that covered the ground

from Christmas Day to the 13th instant, and which interfered with plumbing operations in the suburban districts. A very large amount of building of small houses is going on in North Vancouver, South Vancouver and Point Grey, but with bad weather conditions construction was hampered. Now that the snow has gone and every fine day is a spring day, it is expected that more work will be undertaken. The building record of the past year in Greater Vancouver was beyond expectations, and the outlook for 1912 is that last year's figures will be exceeded.

The weather made little difference to the work on large buildings, which goes steadily on. Latest plans of some of the large west end structures show that more plumbing work is being done in proportion to the size of the building than was formerly the case. This is due to prosperity. It is found that the better and the nicer the fittings the more demand there is, and suites of rooms have every fixture that tends to convenience.

R. C. Hodgson, of the Hodgson Plumbing and Heating Company, was an unsuccessful candidate for reeve in South Vancouver. Mr. Hodgson was formerly a member of the hardware firm of Hodgson & Stearman, which firm was established about ten years ago. A year or so ago, partnership was dissolved and the hardware end of the business was taken over by Mr. Stearman, while Mr. Hodgson established a separate company. He is prominent in South Vancouver affairs. Last year he was president of the South Vancouver Board of Trade and proved an efficient and capable officer. Elections in South Vancouver are conducted so that occupiers of land holding agreements of sale cannot vote, and many residents are thereby denied a franchise. The majority against him was very small.

## Must Make Deposit.

Wholesale firms dealing in plumbing supplies have laid down the rule that before credit is given to plumbers starting in business there must be a deposit of \$400 in a bank, which can be appropriated in the event of the supply houses being left in the lurch. This action has been decided upon because of a number of failures among contracting plumbers. In some cases, head of business skipped out and more than one wholesale dealer, besides others, were unable to secure money for goods supplied. Of late months, some contracting plumbers have been bidding against each other without making sure of a reasonable profit. The result of this has been apparent.

## NEW SUPPLY HOUSE.

W. A. Porter & Co. is the name under which a new supply house has been launched in Toronto. They will do a jobbing business, plumbers' and steamfitters' supplies, opening on February 1 at 155-7 George Street.

## GARLOCK PACKING.

The Garlock Packing Co., Hamilton, Ont., have issued a catalogue illustrating their full line of packings. It runs 112 pages, is printed in coated paper and has a two-colored embossed cover; it is in fact, one of the most creditable catalogues from every standpoint seen for some time.

Each variety of packing is illustrated, described and priced. The catalogue will serve as a handy reference.

## H. W. GLASSFORD DIES.

Montreal. — Apparently in perfect health Tuesday night, Hugh W. Glassford, president of the Rockwood Sprinkler Co., was found lying dead in his bed-room on Wednesday morning. Heart failure was the cause of his sudden demise.

## PERSONAL NOTES.

Mr. Berryman, manager of Metals Ltd., Calgary, has returned after a business trip in the east.

F. T. Rawley, Canadian manager of the Honeywell Heating Specialty Co., is visiting the jobbers and architects of New York. He speaks most enthusiastically of trade prospects in Canada.

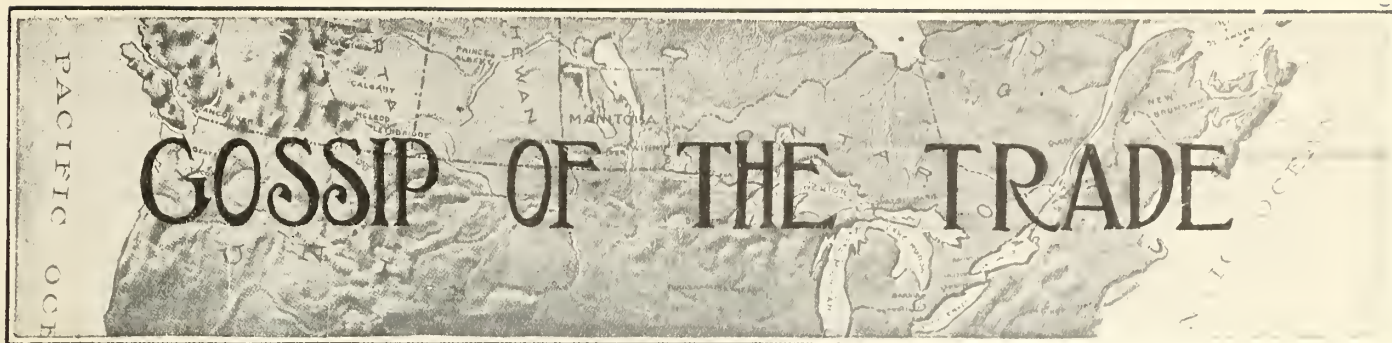
## WILL DISCUSS TRANSPORTATION

Montreal.—Luncheons of the Builders' Exchange are continuing popular, many visitors attending now as well as members. At the gathering on Wednesday of last week, there was an unusually large attendance of outsiders, among them three women. They had come to hear Joseph Fels of Philadelphia, give his views upon the subject of single tax.

Mr. Fels' views, by the way, are immediately clear to all who hear him. He believes in taxing only that which is immovable. He thinks business and income taxes are robbery. He believes no man is entitled to profit from increased value of land, which has come about through no work of his own. His views, indeed, are much after those of Henry George.

Next week F. G. Todd, the Montreal landscape architect, is to address the Exchange upon the important subject of town planning and transportation.





#### **Tinshop was Burned.**

Winnipeg, Man.—The tinshop of J. W. Wright, 239 Main street, in the Conway block, caught fire, and some damage was done.

#### **A Busy Man.**

This has been a busy week for John Watson, secretary of the Canadian Society of Sanitary & Heating Engineers. If there is one thing Mr. Watson likes as well as the society convention it is curling, and this week all those gay Scotch players of the "Roarin' game," have been in Montreal.

#### **Shop Burned Out.**

Kenora, Ont.—In the fire here in which E. Nelson lost his life, the shop occupied by T. G. Downard, was totally destroyed. Very little of his stock was saved and the loss is estimated at \$1,200, partly covered by insurance. Mr. Downard intends to start into business again at once.

#### **A New Line, This.**

Chapleau, Ont.—Wainwright & Morrison, plumbers, of Sudbury and Chapleau, have bought the moving picture show, which they intend to operate in future. It is closed for a short time for alterations and improvements. The new management promises that everything will be first class.

#### **E. Gallagher Injured.**

Kingston, Ont.—Edward Gallagher, a plumber in the employ of McKelvey & Birch, met with a painful accident at the Collingwood Shipbuilding Co. dry dock. Gallagher was carrying a pipe when he slipped on the icy pavement and fell, the pipe cutting a deep gash over his eye, that required four stitches to close.

#### **To Continue System.**

St. Thomas, Ont.—The report of the New York experts with regard to the condition of the city's heating system has been received and will be laid before No. 5 committee at an early date. The experts find many defects in the present system, but suggest improvements, which, if carried out, would, they say, warrant the city in continuing it.

#### **Metal Worker Killed.**

Toronto, Ont.—William Neilson, a sheet and metal worker, of 79 Lyle Ave., was instantly killed by putting his hand on a compensator of an electric switch.

The accident happened in the basement of the West End Baptist church, at Queen and Callendar streets, where Neilson was working. Neilson was 22 years old, unmarried, and was employed by W. E. Dillon, sheet and metal worker.

#### **Plumber was Burned.**

Hamilton, Ontario.—Fumes from a can of japan, near which a plumber was working with a candle, ignited and caused a small fire at St. Patrick's School, Hunter and Liberty streets, this morning. As soon as the alarm was raised, the gong for fire drill was sounded, and the sisters of St. Joseph, who teach the school, had the children out of the class rooms before the firemen arrived. J. Grosecnor, 102 Catharine Street, the plumber, was badly burned about the hands.

#### **Had Face Burned.**

Fort William, Ont.—The gasoline stove which Alex. Cameron was using to heat his soldering irons while doing a plumbing job in the home of A. J. Boreham, on Syndicate ave., began to show symptoms of an alarming nature yesterday afternoon. Mr. Cameron grabbed the stove just in time and threw it into the back yard. The gasoline caught fire and the flames mounted higher than the house. Mr. Cameron had his face and hands burned, but his presence of mind saved the house from a bad fire.

#### **Steamfitter's Bad Fall.**

Saskatoon, Sask.—A man named McKay, a steamfitter, working for McAdam, the plumber, who is placing the radiators and other steamfitting work at the Empire theatre, fell from the fly floor, a distance of thirty feet, to the stage. McKay was fixing a radiator on the fly floor, and removed the air vent, which caused the water to gush out, the stream striking him right between the eyes. He jumped back to get out of the way and stepped right off the floor. Fortunately his fall was broken by a pile of lumber that was standing slantwise against the wall, down which he slid to the stage floor, sustaining bruises and a dislocated shoulder.

#### **Hig's Seven Won.**

Fort William, Ont.—The annual hockey match between the plumbing staffs of Ed. Higginbottom and Culliton & Mc-

Crae, was played at the Arena yesterday. After a very exciting game the team representing the Higginbottom establishment won out by the score of eight to three. The following were the winners:—Higginbottom, Carson, Passingham, Blundon, McPherson, Evans, Allan. The losers had to provide supper for the victors.

#### **Business Changes.**

Regina, Sask.—Read Bros. have started here in the plumbing and heating business.

Battleford, Sask.—W. B. Lewis has secured premises in J. H. Gooderham's old stand and will proceed to do plumbing and heating work.

Rouleau, Sask.—Mason & Poole have moved their plumbing shop into a new store. They have now a commodious showroom for displaying goods.

Leamington, Ont.—W. Nebbitt has moved his workshop to his residence.

Nutana, Sask.—C. W. Arrand and Wm. Pickles purchased the tinsmithing and plumbing departments from J. L. Larmer in Nutana. They will conduct business under the firm name of the Nutana Plumbing and Heating Co., at 529 Main street. Mr. Larmer retains the hardware business.

St. Thomas, Ont.—W. E. Raynor has moved into his new quarters on Talbot street.

Preston, Ont.—The Bernhardt & Gies Hardware Co. are about opening up business in Dundas in the plumbing, heating and tinsmithing line. They have secured a good central location.

Macleod, Alta.—W. G. Andrews has moved his tinshop to 23rd street in the rear of his former location.

Newboro, Ont.—James V. Moriarty, who has been manager for four years of the Newboro tinware and stove store, has purchased the business. He took possession on Monday, Jan. 15.

Montreal.—Lavigne & Larue, of Montreal, have dissolved partnership.

#### **GURNEY MEN IN CONFERENCE.**

The representatives of the Gurney Foundry Co. in the Montreal and Winnipeg districts have been in Toronto conferring with the officers of the company and preparing for the year's campaign.



## Plumbing and Heating Markets

### MONTREAL.

Montreal, January 30.—These are fine days for the plumbers. Still the cold weather continues and still there is a great deal of repairing to be done. Defects in furnaces and boilers have to be fixed promptly these days. Anything wrong with the plumbing also needs immediate attention, and as faulty construction of houses or carelessness in protecting exposed parts is resulting in frozen and broken pipes, practically all the plumbers of the city are hard at it.

The manufacturers and handlers too, are busier than might be expected. January is usually a quiet month with them, but this state of affairs has not come about this year. There is little thought of shutting down factories. The product is selling too well, at this very season, to make that course seem advisable.

Beside repair work there is a good deal of movement. Enamelware is still in demand. Additions are being made to heating plants. The month has proved one of unusual activity.

#### Some Enamelware Moving.

Enamelware.—Orders being received for this line largely call for spring delivery. Some houses and public buildings are only now being equipped. For these there is somewhat of a rush, as the owners naturally wish to have their places in good shape by the middle of February—the time people generally commence looking out for houses into which they hope to move in May. Some of the spring orders too, call for early delivery, so the manufacturers are not being able to let up at all. Accessories, such as are made for bathroom use, are selling well; and orders for these are being received quite largely.

Lead Pipe.—The Pig Lead market has been zig-zagging about in bewildering fashion of late. The changes have not been very great, but they have come suddenly. However, this has had no effect upon the price of pipe. Usually, at this season of the year, the value of all pipes drops somewhat, due, of course, to the small demand. This decrease has not occurred as yet, nor does it seem likely to come. At the end of fall the manufacturers were still somewhat behind in their orders. They filled these, but the jobbers met such an unexpected demand that they had to order again from the makers, whose production, therefore, was kept down.

#### Used Much Lead Pipe.

Of course the repair work has been responsible for much of the demand. Plumbers have used a great deal of lead pipe during the past two weeks.

Soil Pipe.—The call for this, too, kept

up far into the fall. Little is being used now, but prices are not being dropped. The manufacturers are not particularly desirous to stir up an unnatural demand. Looking into the future they see a great call for this class of goods, and they know that all the reserve stock they turn out at this season will be consumed long before the summer of 1912 is over.

Boilers and Radiators.—The great bulk of business in this line is, of course, completed, yet there is a good steady trade going on. A few radiators are still being installed; while boilers are being placed in buildings which are just nearing completion, or which have recently been enlarged. It is surprising how many people think that their old heating plant will be sufficient for their enlarged buildings. But they discover their mistake, and in the heart of winter have to make changes.

#### Solder Selling Well.

Solder.—Repairing work is bringing about a good demand for solder. Tinsmiths, moreover, are buying for spring, when they will need good supplies to enable the finishing of work upon sap pails and milk cans.

Iron Pipe.—Little ordering is noted in this line. There was a report that prices were to be advanced, but as yet nothing definite has been decided. It would seem more likely that the prices will remain unchanged, for a considerable time.

## Builders' Exchange Doing Good Work

REGINA, Saskatchewan.—The Regina Builders' Exchange which was formed a year and a half ago is one of the most energetic organizations of its kind in the country. The organization was completed with the object of drawing the various trades together.

The membership is now about fifty and includes representatives of all the building trades. So far, the most cordial relations have existed between the Regina Exchange and the various trades. Any small disputes that have arisen have been readily adjusted by a meeting between the parties concerned, this being attributable in no small measure to the good offices and influence of the master builders' association. The Exchange has been quite successful in putting building work on a more satisfactory plane.

The present directorate of the Exchange is composed of the following: President, W. A. Wilson, of the general contracting firm of Messrs. Wilson & Wilson, Regina; vice-president, D. J. McKay, of the McKay Construction



R. H. READ.

Regina Plumbing and Heating Co.,  
Treasurer of the Builders' Exchange.

Company, Limited, Regina; secretary, George Powell; Treasurer, R. H. Read, Managing Director Regina Plumbing & Heating Company, Limited. Directors: J. M. Taylor, of the North Western Electric Company, Regina; R. J. Lecky, Assoc. Mem. C.S.C.E. (president, 1910), general contractor; George Minkley, contractor; H. J. Potts, of Messrs. Potts & Smith, plumbers and steamfitters, Regina.



H. J. POTTS.

Director of Exchange.

It will thus be seen that the sanitary and heating trades are well represented on the directorate.

Mr. Potts is vice-president of the Canadian Society of Sanitary and Heating Engineers for Saskatchewan.

## PLUMBING SUPPLIES

National Lowdown Closets  
Imperial Lowdown Closets

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### "Miller" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joints or possible leakage. The cone-shaped Disc prevents sticking.

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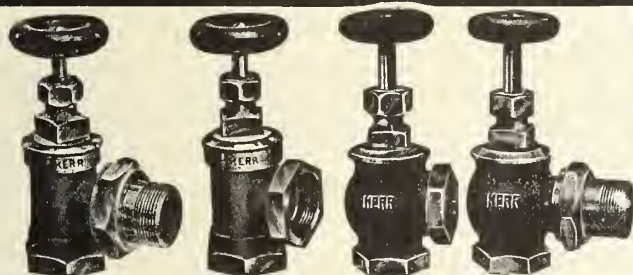
We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

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Steam Radiator Valve.

**MILLER LIMITED, - LONDON, CAN.**



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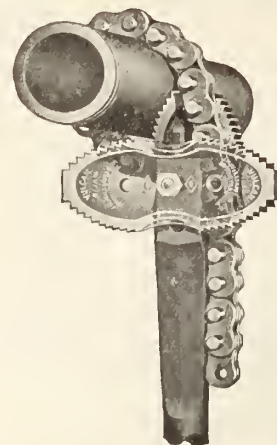
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## CHAIN PIPE TOOLS ARE SAFE

Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. The use of Vanadium Steel parts in the Vulcan Chain Pipe Wrenches not only gives a decided increase of strength, but a larger factor of safety that is ample protection to the operator.

American Vanadium Facts

That they may command your full confidence and give you superior service in chain pipe tool work, nothing meaning "better goods" will be left undone.

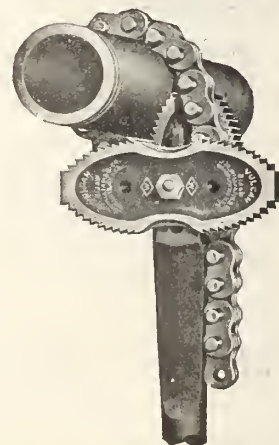
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PRICE OF ONE.**

**J. H. Williams & Co.**

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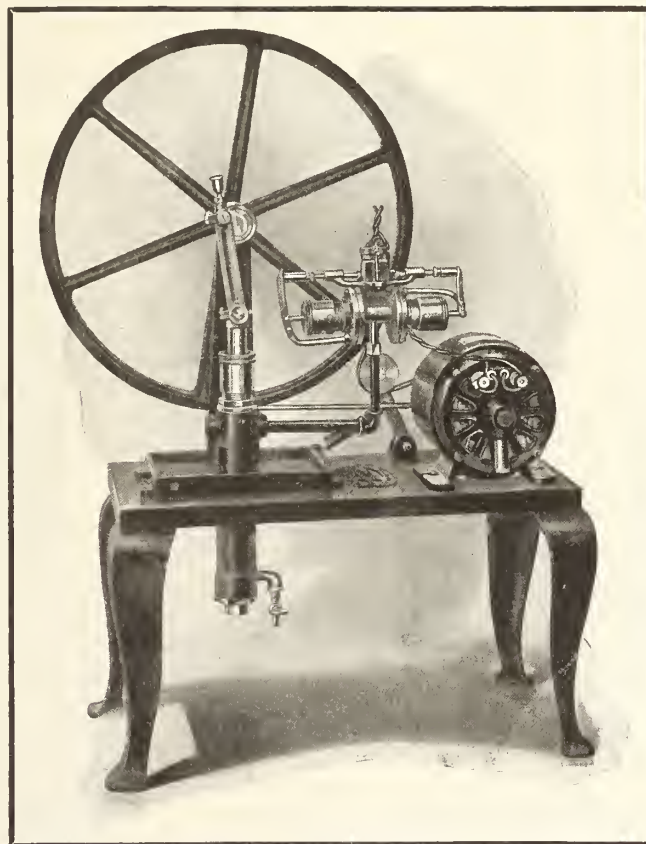
## SILENT ELECTRIC HOUSE PUMP

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The Construction and Mechanism are of the very highest type. No better workmanship or material can be put into a pump. Its design is unique and very ornamental. It will appeal to your customers at first sight.

The Crank Shaft is of steel, mounted on ball bearings. The Connecting Rod has adjustable bearings to take up any possible wear. The piston rod is one inch in diameter—can never wear out. Just three places to oil. Every part interchangeable, making repairs cheap and easily fitted.

Will deliver 125 gallons per hour, up to 40 lbs. pressure; is double acting with only two valves, and is perfectly balanced. Valves are solid rubber, quick seated under springs, operated with one eight horsepower motor, wound for any current, and can be fitted with an automatic switch for either pressure or open tank work.



Every householder will keenly appreciate the advantages of such a pump, and every plumber knows the need of it—if the two get together, mutually, satisfactory results should quickly follow.

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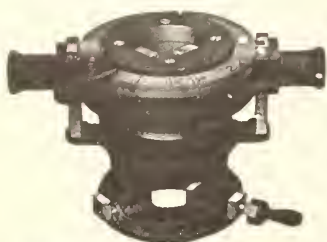
## Every Plumber

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## Adjustable Die Stock

With this device every convenient corner is accessible and it works so easily that a child could run it.

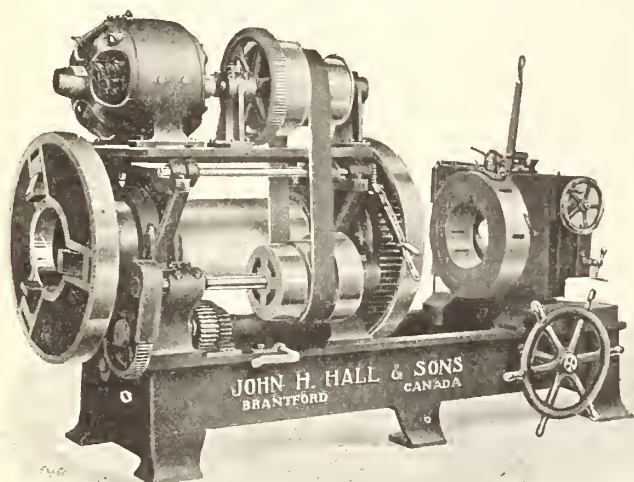


Each die stock contains one set of dies which can be easily adjusted so as to cut four different threads, eliminating the buying of three die sets, thus reducing much keep-up expense.

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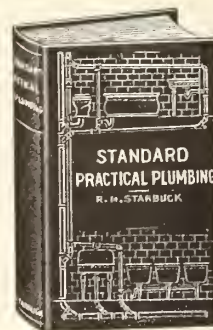
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By R. M. Starbuck

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If he installs plumbing work that leaks, his business suffers as a result, therefore it is necessary for him to make the most rigid test before leaving the job as finished. By testing with the THOMSON SMOKE MACHINE, every leak which may exist in the system is made manifest by smoke issuing from it.

This machine is not an experiment, but a practical, successful and durable article, built of the very best materials, and will last long enough to pay for itself many times over.

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*and Sanitary Engineer of Canada*

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Vol. VI.

Publication Office : TORONTO, FEB. 15, 1912.

No. 4

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## Cast Iron Enameled Ware

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This is another of our new Fixtures that is meeting with  
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**60,000**  
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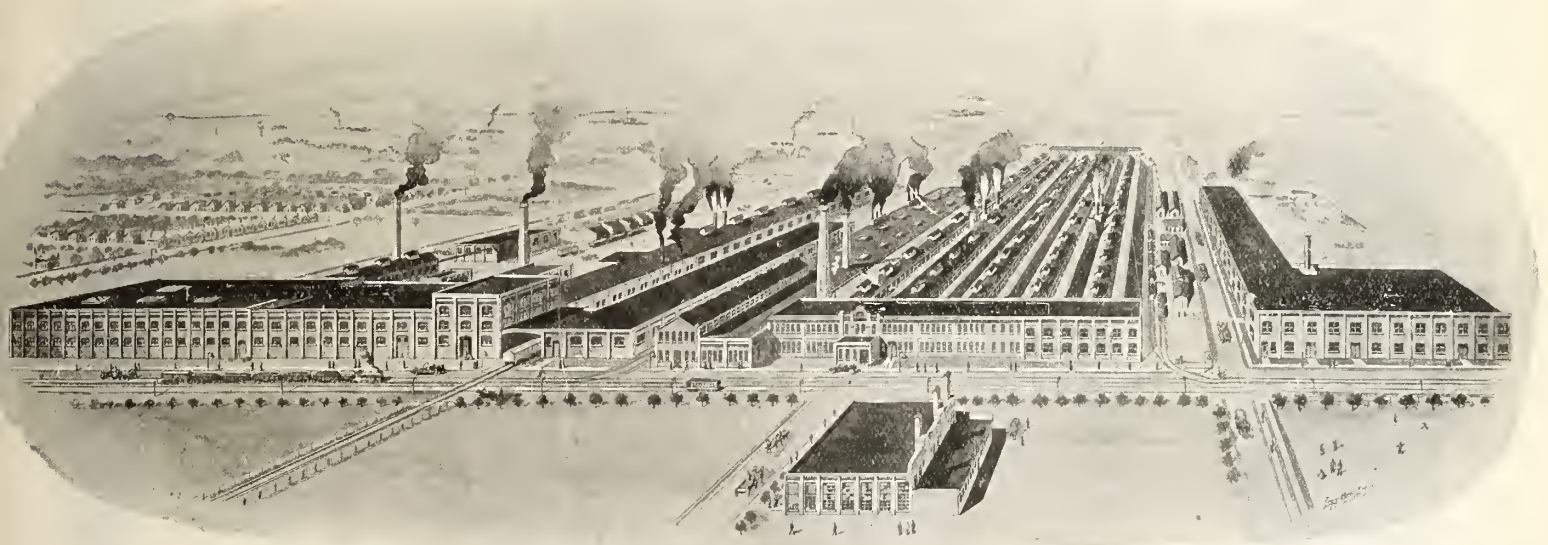
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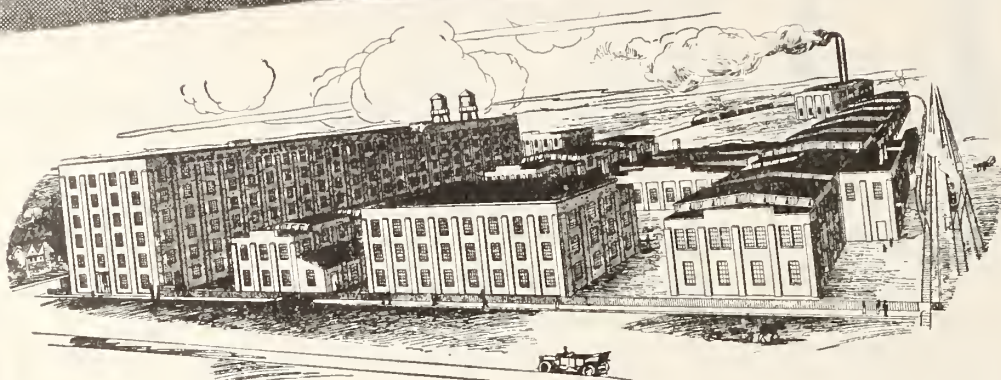
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THE building of a new million-dollar factory at Toronto and the opening of show rooms in several important Canadian centres places us in a position to cater to the trade throughout the Dominion in a manner that will more than ever tend to further the harmonious relationship that exists between the plumbers and ourselves.

We want your co-operation in giving the public of this country the kind of Plumbing Fixtures that stand for all that is best in durable quality and most beautiful in design  
You know that means

# Standard Sanitary PLUMBING FIXTURES

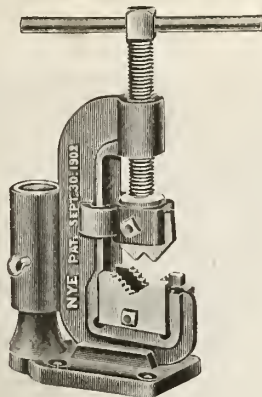
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Here is a vise that does not appeal for favor with disguising changes of negative value. Innovations of REAL MERIT. You will want it because it is totally unlike other tools of this character---because its efficiency is three-fold that of any other light weight vise. It is different in its superior strength of construction---different in its perfect adaptability for work, on or off the bench, different in its compactness---it weighs but three pounds---different in its versatility---can be used when separated from the base as a wrench. Different in the jaws, which are made from the best tool steel in the world. The long screw is made of cold rolled steel, case hardened.

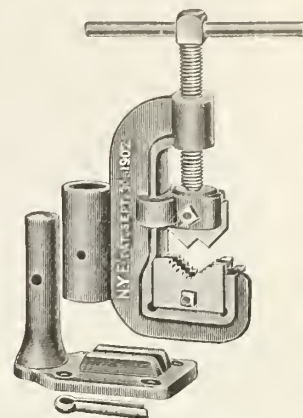
This tool is absolutely without a peer. It is the last word in the art of vise making.

Drop me a line to-day and I'll send you a little wonder vise on Free Trial.

REMEMBER this tool is backed up with THE NYE GUARANTEE--satisfaction or no money.

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Price \$2.00 each net

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BLACK and GALVANIZED. SIZES, 1/8 IN. TO 4 IN.

All our pipe thoroughly inspected, tested to 600 lbs. hydraulic pressure and branded.

Ask your jobber for



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## CANADIAN TUBE & IRON CO., LIMITED

Montreal

Works: Lachine Canal

## WE PAY FROM \$10.00 TO \$50.00 PER WEEK

to our salesmen. To some of our best men we pay more.

Are you a \$10.00 or a \$50.00 man?

If you are a \$50.00 man, we want you.

If you are a \$10.00 man, with an ambition to be a \$50.00 man, we want you.

You can devote your spare hours to our work, and make more money than you can make from any other commercial position in the same time.

Here is an occasion to reveal your capacity. You are not satisfied to be earning the same salary next year as now.

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## BOILERS

AND

## RADIATION

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UNCONDITIONALLY  
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EASILY INSTALLED—  
Because Accurately Made.



### Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken  
to keep our friends  
in the Trade in  
touch with what we are  
doing. It will contain  
some sensational an-  
nouncements during the  
coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

## STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

Showrooms, 80 Adelaide St. E.

MONTREAL  
138 Craig St. W.



# First Gun Fired in Publicity Campaign

Articles to be Published in Newspapers by Calgary Association of an Educative Nature—Efforts Being Made to get a Large Attendance at Convention—Success of Exhibition Assured.

THE first gun has been fired in the publicity campaign of the Calgary Association of Sanitary and Heating Engineers. A recent issue of the Calgary Herald contained a lengthy article from Secretary McVeigh, in which was outlined the steps that are being taken to make the convention to be held there in July a big success. Incidentally, the article took up the question of the status of the trade, enlarged on the change in name and went on to demonstrate the big influence that the sanitary trade exercises in promoting health improvements.

Other articles of a similar nature will be published from time to time and in newspapers in other parts of the country.

## Follow the Lead.

It is felt that by means of educative articles of this description, a great deal can be done to bring the public to a fuller realization of the importance of the trade. Mr. McVeigh urges the necessity of members of the trade in all parts of the country taking the same course. "It was generally conceded," he writes, "at the last convention that, in order for the sanitary and heating engineer to exact the respect and attain the position in the community that is really his due, he should on every possible occasion bring himself before the public gaze as a first-class business man and a benefactor to the community. This serves the purpose of advertising the coming convention, but it primarily serves to keep the sanitary and heating engineers before the public eye as a body of men who are up-to-date, progressive and aggressive. It shows that they realize their own importance in the public mind and take the place that is theirs

as a modern scientific engineer—a man who creates things, and, by carefully looking after and safeguarding the health of the community, is entitled to the respect and consideration of the citizens. Now, what I would like to ask is why the sanitary and heating engineers of the different centres of population throughout Canada cannot follow the same lines and use the public press whenever possible to keep themselves before the public; not as plumbers and fitters, as I said before, but as sanitary and heating engineers? A few articles printed in the papers (who are always glad to receive good copy) would do much to elevate our standing."

The point is a good one and is worthy of close attention on the part of all members.

## Plans Being Made.

Active arrangements are now being made for the convention. Lists are being compiled, embracing every firm in the plumbing and heating business in Canada, these lists being revised by the different provincial vice-presidents. A series of letters will be sent out to all on these lists. Every firm in this particular line of business from St. John's, Nfld., to Victoria, B.C., will be in receipt of regular letters from the Calgary association, the object being to keep them constantly reminded of the association.

## The Exhibition.

The success of the manufacturers' exhibition is now practically assured. The response to the invitations extended has been most gratifying. The interest being taken by the manufacturers is most satisfactory.

In order to make the exhibition completely successful, it will be held in a building with both water and sewer con-

## Sanitary and Heating Engineers to Convene At Calgary next July

Gathering Here in Summer Will Be Splendid Advertisement for City—In Connection an Exhibition Will Also Be Held and All Exhibits Will Be Seen in Operation.

One of the greatest assets that Calgary has is its position as the centre of the sanitary and heating trade in Canada. It is the only place where the sanitary and heating engineers of the Dominion can meet and discuss the problems of their trade. The Calgary Association of Sanitary and Heating Engineers, which comprises all the sanitary and heating engineers of the Dominion, will hold its annual convention in Calgary next July. At the same time an exhibition of sanitary and heating goods will be held in connection with the convention. This exhibition will be a most valuable advertisement for the city and will also be a most interesting feature for the public. The Calgary Association of Sanitary and Heating Engineers is a body of men who are up-to-date, progressive and aggressive. It shows that they realize their own importance in the public mind and take the place that is theirs

Securing publicity in the public press.

nections, so that the plumbing goods can be shown in actual operation. Steam will be supplied also, so that there will be an equal chance to demonstrate heating goods properly.

An invitation will be extended to the general public and particularly to architects and builders, to visit the exhibition on certain days during the week.

## The Programme.

It is too early yet to map out the programme in detail, but it will certainly be an elaborate one. The Calgary association intend to spare no expense to make the week highly interesting, instructive and enjoyable.

## RECORD-BREAKING WINTER.

The past month has been a record breaker in more respects than one.

The first record smashed is the weather bureau frigidity figures. Even the most venerable of old timers cannot truthfully assert that he has ever experienced a more persistent stretch of real Arctic weather.

A new record also has been set for jobbing work in the plumbing trade. Reports from all over are to the effect that the trade has been kept on the jump, attending to the business that the cold weather has brought.

"My telephone hasn't quit ringing for the last four days," says a Toronto M. P. "I'm getting a bad attack of phone-users-ear-cramp, and my stock of explanations why a man can't be sent out on the jump has been exhausted long ago." Every plumber in the country will probably echo, same here.

Pipes have been bursting, systems have become frozen up, heating plants have refused to warm houses up, with a persistency which has never been equaled. On the whole, it has been a pretty satisfactory winter from the standpoint of the plumber. It takes a lot of work to keep profits up with expenses in the plumbing business nowadays.



Three prominent members of the trade in Calgary—Reading from left to right: A. C. Grant, N. M. Burnett, W. Gillett.



# Proper Sanitation of School Buildings

**A**N interesting article from the pen of Thomas S. Ainge, sanitary engineer of the Michigan department of health, appears in a booklet on "Public Health," published by the Michigan State Board of Health, dealing with the sanitation of school grounds and buildings.

In dealing with the problems which will be of particular interest to the trade, he says, in part:

In a school building, an approximation of the purity of normal outdoor air cannot easily be maintained, therefore a standard of permissible impurity, based upon the amount of carbon dioxide in the air, has been adopted by certain writers upon this subject as the unit of ventilation.

Normal outdoor air will contain anywhere from three to five parts in ten thousand carbon dioxide; and where the latter in the air of a room does not exceed that which is present in the air outdoors by more than three parts in ten thousand, the ventilation is said to be good. Air containing ten parts of carbon dioxide in ten thousand is considered poor, and by some authorities distinctly harmful; twenty parts very poor; yet these amounts are often equalled, if not exceeded, in some schoolrooms which have no means of ventilation.

The principal requirements for the warming and ventilation of a schoolhouse are that the rooms shall be kept at a temperature of from 68 to 70 degrees, and that the air in the rooms shall be changed as often as may be necessary to afford each pupil not less than 30 cubic feet of fresh air per minute.

There are two principal methods of warming and ventilation which are suitable for schoolhouses:

1. Indirect heat, with natural draft, commonly known as the gravity system.

2. Indirect heat, with forced draft, commonly known as the fan, or plenum, system.

The first method is not reliable, being affected by every change in the temperature of the air outdoors, but will give fairly good results in buildings of not more than four rooms.

For buildings of more than four rooms and in the case of any room of considerable size, forced draft will be necessary to secure an even temperature in the rooms and a positive draft in the ventilating flues at all times.

With the exception of toilet rooms and hallways, direct heating, by stoves or radiators, should not be permitted in any part of a schoolhouse of any size or description; and this rule applies also to the so-called direct-indirect method of warming, which by itself, is not capable of properly warming a schoolroom and is absolutely unreliable during very cold or windy weather.

The following is a brief description of the component parts of the warming and ventilating apparatus which will be found suitable for the various types of school buildings;

A one room schoolhouse, such as is found in the rural districts, should be warmed by a stove, of suitable size and construction, surrounded by a heat proof jacket with an open top, as shown in Plate 5.

From an opening in an outer wall of the building, fresh air is conducted, by a metal type, to the lower part of the space between the jacket and the stove where it is warmed and discharged into the room through the opening in the top of the jacket.

Provision must be made for the removal, by a heated flue extending to within a few inches of the floor line, of a volume of vitiated air equal to the volume of fresh air which enters the room.

Where the smoke flue is inside the room and has an area of not less than one square foot, it may be used for the

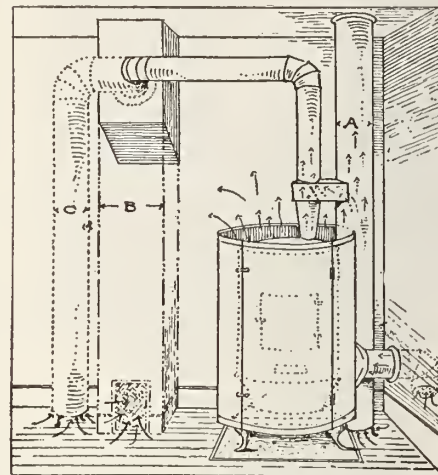


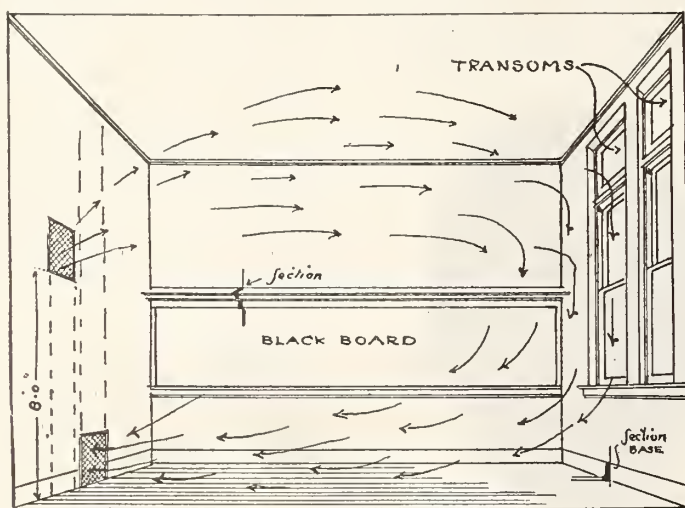
Figure 5.

removal of both smoke and vitiated air, in the manner shown at B or C, in Plate 5; otherwise a separate and heated flue for the removal of the vitiated air must be provided, as shown at A, in Plate 5.

Proper dampers and other necessary apparatus should be provided in connection with the warm-air pipes and flues, so that the temperature of the air passing into the rooms may be controlled by the admixture of certain proportions of warm air and air which has not been in contact with the heated surfaces of the furnace.

Where steam is used as the warming medium in a schoolhouse of the type under consideration, whenever possible, the warm-air flues should be grouped so as to bring all or several of the indirect radiators within a fresh-air room, or rooms, such as was outlined for use in connection with furnaces; but where this is not practicable, the fresh air should be conducted by tight metal pipes from openings in the outer walls to each stack of radiators and the latter should have tight metal casings on every side. By-passes should be provided at the base of each flue for the regulation of the temperature of the rooms by the admission to the latter, whenever required, of air which has not passed through or over the radiators.

For schoolhouses of more than four rooms, either furnace or steam heat may be used as the warming medium, but the



PROPER LOCATION OF VENTILATING REGISTERS

Figure 6.

movement of air through the rooms should be controlled by a pressure fan and the temperature of the rooms regulated by means of dampers placed at suitable points and operated by hand or by suitable thermostats.

For every type of schoolhouse of more than one room, the general arrangement of the warm-air and vitiated-air flues will be the same. Both should be on or in the inside walls of the building, and the warm-air and vent registers should be on the same side of the rooms, the latter at the floor line and the former about six or seven feet above the floor, as shown in Plate 6. Where, however, the cloak rooms are a part of the classrooms, as shown in the plans of the school buildings in Plates 1 and 4, and the doors, if any, between the two rooms are kept well above the floor, the vent registers may be placed in the cloak rooms and thus secure the removal of odors from wet or dirty clothing. Every room should have a separate vent flue continued to a point above the roof; but for architectural appearance, several of such flues which are near to each other may be grouped and pass through the roof as one stack. In buildings already erected in which no provision has been made for ventilation, vertical flues of galvanized sheet iron may be used in places where brick flues would be impracticable or too expensive. In buildings which are warmed by steam and in which the ventilation is by the gravity system, the provision of accelerating steam coils in the vent flues would be a distinct advantage.

For the prevention of unpleasant and probably dangerous drafts at such times as ventilation by open windows would be practicable, the latter should be pro-

vided by transoms, as shown in Plate 6.

In the rural districts, and wherever a sewer system or water supply under pressure are not available, outdoor sanitary dry closets, with movable galvanized sheet iron pails or boxes, or better still, a cement receptacle, similar to that shown in Plate 7, should be provided for the reception of excreta.

Each and every closet of any type, and every urinal section should be provided with an adequate local vent, and these should be connected with a vertical flue extended to a point above the roof, and the upward draft in which shall be positive at all times, secured, if need be, by the aid of a fan, stack heater, or other suitable apparatus.

In the smaller schoolhouses, the toilet rooms will usually be located in the basement of the building, but in the larger buildings it is now the custom to install separate toilets for each sex on every floor. They should never be located where it is not possible to secure adequate light and ventilation by means of outside windows.

Floor drains in toilet rooms should be provided with traps which can be easily cleansed and the seats of which cannot readily be broken by siphonage or evaporation.

#### IN LARGER QUARTERS.

The rapidly increasing demand in Pittsburg and vicinity for the asbestos, magnesia and other products of the H. W. Johns-Manville Co., has necessitated a move from their present location in Liberty avenue, above Ninth street, to larger quarters.

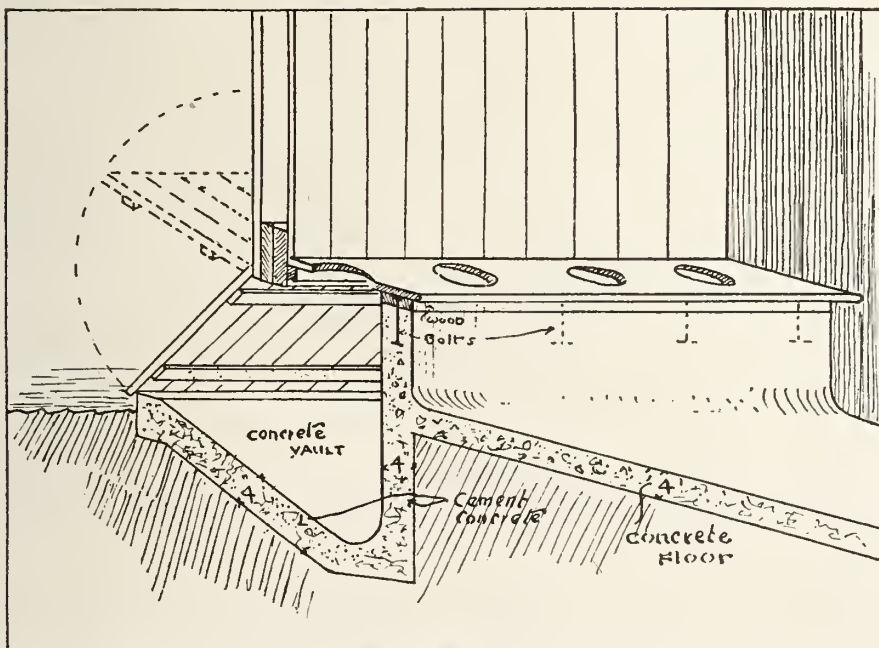


Figure 7.

After January 24, the Pittsburg branch of the H. W. Johns-Manville Co., will therefore occupy the entire eight-storey stone, reinforced concrete and steel building at the north-east corner of Wood street and First avenue, which has been leased by them for a term of years.

This building, 31 by 96 feet in size, totals in gross floor space approximately 23,808 sq. feet, and is one of the most substantial structures in the downtown section of Pittsburg.

### New Method of Cleaning Metal

To clean lead, tin, or solder, do not heat the metal to a red heat and burn sulphur in it as is usually done by the plumber. Try the following; it is good, and, queer to relate, little known.

Heat the metal to be cleaned somewhat under a red heat. It must not be red hot. Take a piece of green wood (not a piece of seasoned wood wet), force it to the bottom of the melted metal with an iron rod and hold it there. The gases from the wood will bubble up through the metal and the oxides will be greatly reduced. The dross will be forced to the top of the metal where it can be skimmed off in the usual way with the ladle.

The metal should be "cleaned" in as large quantities as convenient as it is a slow process. To make a first-class job, several pieces of green wood should be used in rotation for each pot, or cleaning, taking at least a couple of hours' time. The whole thing can easily be done by a helper.—J. E. N.

#### CONSTITUTION PROGRESSING.

The Sub-Executive of the Canadian Society of Sanitary and Heating Engineers has finished work upon the constitution, a redraft of which was asked at the last convention of the society. For weeks, Jas. E. Walsh, John Watson, and Joseph Thibeault have been at work upon this. They have discovered, and—as they think—rectified a number of errors, and now are sending out drafts of the changed constitution to all the Provincial Vice-Presidents. These men are to study the new version, and will then forward to Mr. Watson any suggestions for further changes.

All this will take some time, but the work will be completed well before the Calgary Convention, and a few hours spent now to put the constitution on a firm footing, is time well expended.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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TORONTO, FEBRUARY 15, 1912

IT IS PROMPT service which pleases the householders these days. Sanitary and Heating Engineers would do well to remember this, for pleased householders will have more work to do.

### MAKING UNITED FIGHT FOR UNIFORM CONTRACT.

In Montreal a united effort is being made to secure a uniform contract. The action is well planned, and seems certain to bring good results. That Montreal and the Province of Quebec has gone thus far without an uniform contract law is a little hard to understand. The trouble which has been caused by reason of the loose system in vogue has been monumental.

There are hindrances in the way—complicated legal points, not encountered in other provinces—the need of two languages. But already care has been taken to overcome these difficulties. It now remains for the Quebec legislature to give the Architects' Association the required charter power. If public feeling will have any affect upon the legislature this power will be given, for all classes of contractors sanitary and heating engineers, among others, would gain great security, and save much inconvenience through the adoption of a more common sense system of contracts.

THE YEAR 1911 was a favorable year in Canada, according to statistics compiled by Bradstreets. The number of individuals, firms and corporations constituting the business community of Canada is placed at 130,446. During the year there were

### SOME BUSINESS STATISTICS.

1,401 failures, or less than 1 per cent., a splendid showing indeed. The causes of failures are estimated as follows: Incompetence, 226; inexperience, 41; lack of capital, 691; unwise credits, 12; failure of others, 16; extravagance, 12; neglect, 58; competition, 15; specific conditions, 204; speculation, 13, and fraud, 113.

It is one of the strongest proofs of the stability of business conditions in Canada that 83.2 per cent. of the failures can be charged to some fault in the individuals themselves, and not to any general condition. Only 15 went to the wall as the result of competition, and there are none who ascribe their failure to business depression.

There is food for thought in the big number of failures due to lack of capital. It is inevitable in a rapidly developing country that many attempts should be made to start in business without sufficient capital to warrant a start. It is equally inevitable that a certain proportion of these daring ventures should result in flat failure.

The past year has seen rather a larger percentage of failures from that cause than usual.

The number of failures from incompetence is larger than one cares to find. It is rather disquieting that, in an age when specialized efficiency is sought, there should be such a large number of men absolutely incompetent to look after the business they have embarked in. Undoubtedly, business efficiency is just beginning to make itself felt. We still have a great deal to learn.

The tipping evil and the great need there is of suppressing it is again brought to the fore by some rather startling figures presented by an American contemporary. Last year the Pullman company carried 623,182,757 passengers. There are no statistics to show how many of them paid their tips like little men and how many had the courage to resolutely walk off the car without contributing to the quarter hoard of the obsequious but lynx-eyed porter. The stony stare of a supercilious official "makes cowards of us all." Most men would rather pay a quarter than suffer the ocularly expressed contempt of the dusky czar of a Pullman. It is, perhaps, safe to assume that not more than one in four, who ride in Pullmans, escape paying tribute. That would make the amount paid out in tips last year \$116,844,266.

The figure is astounding but probably not very far from the real facts. There is a ludicrous side to it after all. The men of America pay over one hundred million dollars annually rather than break what has become more or less of a custom. Where does all that money go to? We doubt if the recipients of it could tell. If Pullman porters were a thrifty tribe each individual one of them would be riding in a motor car of his own.

This is one source of "economic waste" which could be effectually remedied. When will traveling men find and enforce that remedy?

THE FORM of publicity suggested by the Calgary secretary would prove effective in helping to raise the trade to a higher status.

WINNIPEG MERCHANTS are out flatfooted in favor of single tax. Sir James Whitney will get them if they don't watch out.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

THE impression exists around plumbing shops that odd moments should be filled in by the highly useful practice of threading nipples. The idea is in high favor with the bosses but some apprentices have been known to express opposite opinions.

Quite a few years ago a Toronto boss plumber gave it out that when the younger members of the staff were not engaged on anything else, they must get busy threading nipples. He placed an empty keg in one corner of the shop and told them to go to it. The keg yawned with cavernous emptiness for some days and then it occurred to one of the apprentices that the daily increasing wrath of the boss could be averted by only one of two courses; hard work or ingenuity. He decided on the latter. Accordingly, he got to work and nailed the keg down to the floor, then filled it up almost to the brim with oakum and over that laid a thin layer of newly-threaded nipples. The next day the boss squinted into the keg and almost tumbled over with astonishment. He had never suspected his apprentices of such diligence.

The staff lived in peace and contentment for several days and Bob, the ingenious one who had thought of it, was voted a credit to the trade. But then it occurred to the boss that he would move that keg back and put an empty one in its place to see if miracles ever happen twice. When they started to move the keg, it refused to budge.

"Bob," gently hinted one of the other apprentices about half an hour later, when the smoke had cleared away, "you thought that idea up. Hadn't you better go and square it off?"

Bob went. "You see," he explained glibly, "it was this way. We nailed that keg down because we thought it might get moved away and then we wouldn't have it there always to remind us to keep pegging away at the threading."

"Bob," said the boss, darkly, "you're wasting your talents. You were cut out for a politician."

The boss was right. Robert M. Yeomans has since proved that he was cut out for public service and is becoming quite a prominent figure in Queen City municipal politics. He is now a member of the council and is bulking rather largely in the public eye. And he has only just started. A good talker, a good mixer and a good executive man, there is no telling to what high offices he may succeed.



Robert Yeomans has proven that he was cut out for public service and is becoming quite a prominent figure in Queen City municipal politics.

It would hardly do to dismiss his platform abilities with such scant mention. Ald. Yeomans is "some talker." He is always there with the ready retort, the vivid verb and the alliterative adjective. He is equally at home when the occasion calls for high-flown eloquence, facetious lightness or acidulated invective. He isn't afraid to talk out in good old Saxon words and at different times has decorated his belt with the scalps of opponents. Needless to state, his municipal experience has made him a firm believer in parliamentary forms. When he attends the meetings now of the Toronto Association of D.S. & E. H., Garrett Frankland stands up to read the minutes.

We now come to the main point of this narrative. Robert Yeomans' elevation to the council board has demonstrated that when the trade has representation on civic bodies, splendid results are attained. He assisted in getting the council to appoint a committee to overhaul the Toronto plumbing by-law—which needed overhauling quite as badly as most plumbing by-laws do. He sits on that committee as representative of the council. It is said that a number of useful reforms are bound to result from the deliberations of this committee. In addition to that, Ald. Yeomans has stirred up an investigation into conditions at the filtration plant and seems to have secured some interesting evidence.

Now for some facts. Robert M. Yeomans was born in the Old Country in 1877. He came to Canada in 1884 and learned the trade in Toronto. Six years ago, he started in business for himself and has since gone into the building line as well.

He was elected to the council last year for the first time and was returned again on New Year's Day with a substantial vote. He has been elected a director of the Exhibition, which is deemed to be a high honor.

## HARRY AND THE POACHED EGG.

It is related of Harry Munday of Montreal, that one day last summer he started off on a fishing tour and found himself on the banks of a brook which wound under the walls of an insane asylum. Harry didn't know what was on the other side of the wall until a head, garnished with uncombed locks and a pair of wild and staring eyes, peered over at him.

"Hello," said the crazy man. "Have you got a piece of toast with you?"

"Certainly not," said Harry. "What would a fisherman want toast for?"

"I don't know I'm sure," said the inmate wearily. "But I'm sorry you haven't any toast. I'm so awfully tired."

"Look here," said Harry, fierce-like, "what do you want a piece of toast for, anyway?"

"Why, I'm a poached egg," said the unhinged one, "and I want a chance to sit down."

Harry "beat it" without further parley.

## WESTERN MEN IN EAST.

A great many western men are in the east at the present time. Fred Armstrong, of the Western Supplies, Ltd., Edmonton, is spending a month in Toronto. Others who are in the Queen City just at present are:—D. Ross, Western Plumbing Supply Co., Saskatoon; Harry Potts, Regina; Tom Cotter, of Cotter Bros., Winnipeg; Geo. MacKay and Mr. Woodhall, manager and president respectively of the Western Foundry and Metal Co., Calgary. All named are well known in the trade. D. Ross was at one time a traveler for Dominion Radiator Co. Harry Potts is vice-president for Saskatchewan of the Canadian Society of Sanitary and Heating Engineers.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## HOT WATER RADIATOR DOES NOT HEAT WELL.

Editor Plumber and Steamfitter,—  
I am sending a drawing of a radiator (shown by figure "A") that does not seem to heat to the best advantage, and

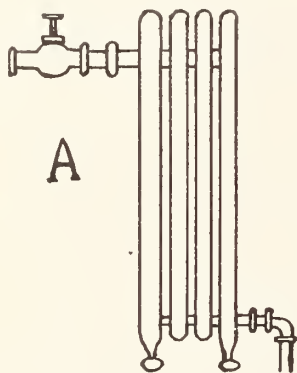


Fig. 1.

wish you would publish a drawing of any better way to connect the radiator to make it circulate to better advantage.

J. I. G.

Some times the manner of connecting the hot water radiator, as shown by our correspondent, will work, and then again it does not give the best of results. We would suggest that he change the return

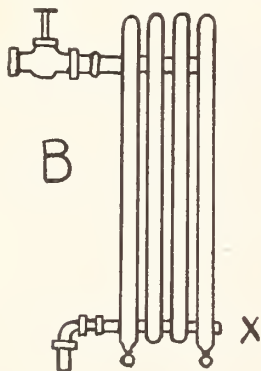


Fig. 1.

connection of the radiator (as shown in drawing "B") plugging the former connection at "X," and we believe that he will then experience no further difficulty in the radiators not heating.

## AMOUNT OF LEAD FIGURED FOR JOINTS ON SOIL PIPE.

Editor Plumber and Steamfitter,—  
How many pounds of lead are generally considered necessary for pouring a joint on a four-inch soil pipe? Is there any rule used in estimating this amount for different sizes of soil pipe?

John Horton.

We should say that from three to four pounds of lead would be sufficient in the four-inch size of soil pipe, the difference being in the amount of space around the hub and the amount of oakum caulked into the joint. One rule for estimating the amount of lead necessary for these joints is as follows: "Allow twelve inches of lead for each inch in diameter of the pipe." A four-inch hub would therefore, in general, take forty-eight ounces of lead or three pounds, but, as previously stated, this amount might run either over or under the amount mentioned being governed by local circumstances. Make the joint at one pouring of the lead as two pourings are impractical, and the second pouring of lead will not unite with the first pouring.

## CUTTING THE WASHER FOR A UNION.

Editor Plumber and Steamfitter,—  
Will you, through the questions and answers department of your valuable paper, kindly tell me of some manner of quickly and accurately cutting a washer for any sized union by any other means than the ever ready pocket knife?

Apprentice.

There is a small machine especially designed for this purpose, and if "apprentice" will write us we will most cheerfully furnish him with the address of the manufacturer. Other than that, he can make use of a hammer and the union itself. Place the rubber over that part of the union over which the uniting ring slips and, holding the rubber (or leather) firmly in place, hammer the rubber with the hammer until the iron of the union cuts through the rubber thus quickly, easily and accurately get-

ting a perfectly fitting washer for that particular union. The gasket for a flange union may be obtained after the same fashion.

## TRAPPING THE RAIN LEADER.

Editor Plumber and Steamfitter,—  
Should the rain leader be trapped, and if so what is best kind of a trap to use?

"House Owner."

We believe that it is customary to trap the rain leader when it drains into

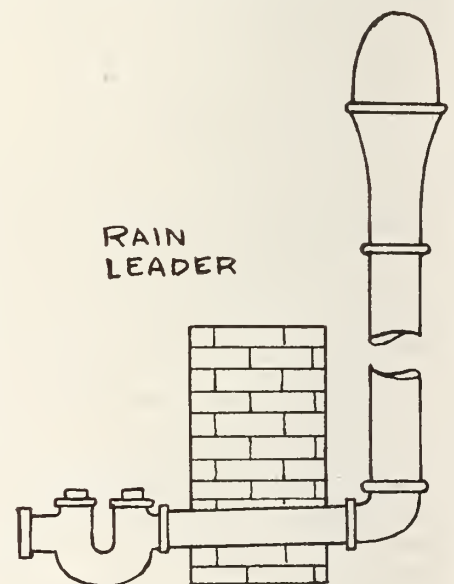


Fig. 2.

the sewer. In drawing number two, we have shown how this may be accomplished and have also shown an increaser with a wire protector at the intake end of the rain leader.

## THE DEPTH AT WHICH WATER MAINS SHOULD BE PLACED.

Editor Plumber and Steamfitter,—  
How deep should the water supply pipes be buried in order to avoid their freezing?

M. L. F.

Unless some covering be used to protects the pipes against the frost's action they should be buried below the line of the action of the frost. In some cases

(according to the climate) this would be from four to six feet deep, while in others they might have to be buried some twelve feet deep or more. We know of no uniform rule in this respect.

### PRESSURE EXERTED WHEN WATER FREEZES.

Editor Plumber and Steamfitter,—When water freezes in a pipe, how much does it swell and about what is the pressure exerted?

G. H. S.

The increase in volume is about ten per cent., and the amount of pressure exerted is something like thirty thousand pounds a square inch.

### A PART OF THE ROUGHING IN ON A SYSTEM USING DURHAM FITTINGS.

Editor Plumber and Steamfitter,—Will you show by a simple drawing the manner in which a bathroom would be roughed in if the Durham fittings were used, and greatly oblige,

A Subscriber.

Agreeable to "A Subscriber's" request, we have had drawn such a "hook

up," showing the stack, vent, and places for the lavatory, the closet and the closet connections. We believe that instead of using the cross at point "A," a better connection would result if the closet vent were made somewhere along the pipe "A—B," say at point "C," for instance, if the amount of room necessary were available.

### WHAT CAUSES THE CIRCULATION OF WATER IN THE WATERBACK?

Editor Plumber and Steamfitter,—Will you please explain to me how or what it is that causes the circulation of water in the waterback or waterfront, as the case may be?

J. G. Rollins.

A quick and temporary circulation is obtained by opening a hot water faucet anywhere on the job, but you will remember that when water is heated it expands. Now, when the water in the waterback becomes heated its weight becomes lessened, and, therefore, the colder and heavier water entering through the lower connection of the waterback tends to force the hotter water to flow through

the flow pipe to the range boiler. In this manner the circulation is established, and for the same reason great care should be exercised in running the pipes between the waterback and the range boiler. See to it that there are no traps and that the fewest turns possible are made in order to make the connections. In order to have the quickest flow of water through the pipes they should be reamed and perfectly smooth on the inside. Frequently the piping is partly stopped up as it comes to hand. A hasty examination will sometimes save a peck of trouble.

### AMOUNT OF FALL GIVEN TO SOIL PIPE.

Editor Plumber and Steamfitter,—In running a line of sewer drain from the house to the main sewer, what is the smallest amount of pitch or fall that should be given to the sewer per foot?

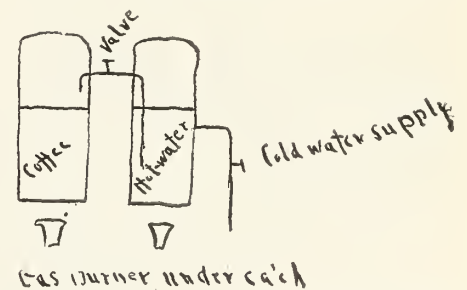
F. R. Miller.

We should figure that, in general practice, a fall of less than one quarter of an inch per foot would be impracticable. While we have observed cases in which from the nature of events, the fall per foot was less than what we have mentioned, we believe that it is safer to proceed with the amount we have mentioned.

### WILL NOT SYPHON.

Editor Plumber and Steamfitter.—The enclosed drawing represents a coffee and a hot water urn, side by side and when the pressure is turned on the hot water is supposed to syphon into the coffee.

Will you or any of your many readers tell me why it does not do so? I claim the pipe connecting the two should turn



down inside a few inches, but probably you can tell me the reason.—A Constant Reader.

As installed, there are not any of the principles of a syphon present. By dropping two pipes as per lines drawn in black ink, a reversed syphon would be had. I think that the trouble is that the air interferes and if the pipes were put in the trouble would be done away with. If a pure syphonic action is desired the relative position of the urns will have to be changed to secure satisfactory results.—D.C.H.

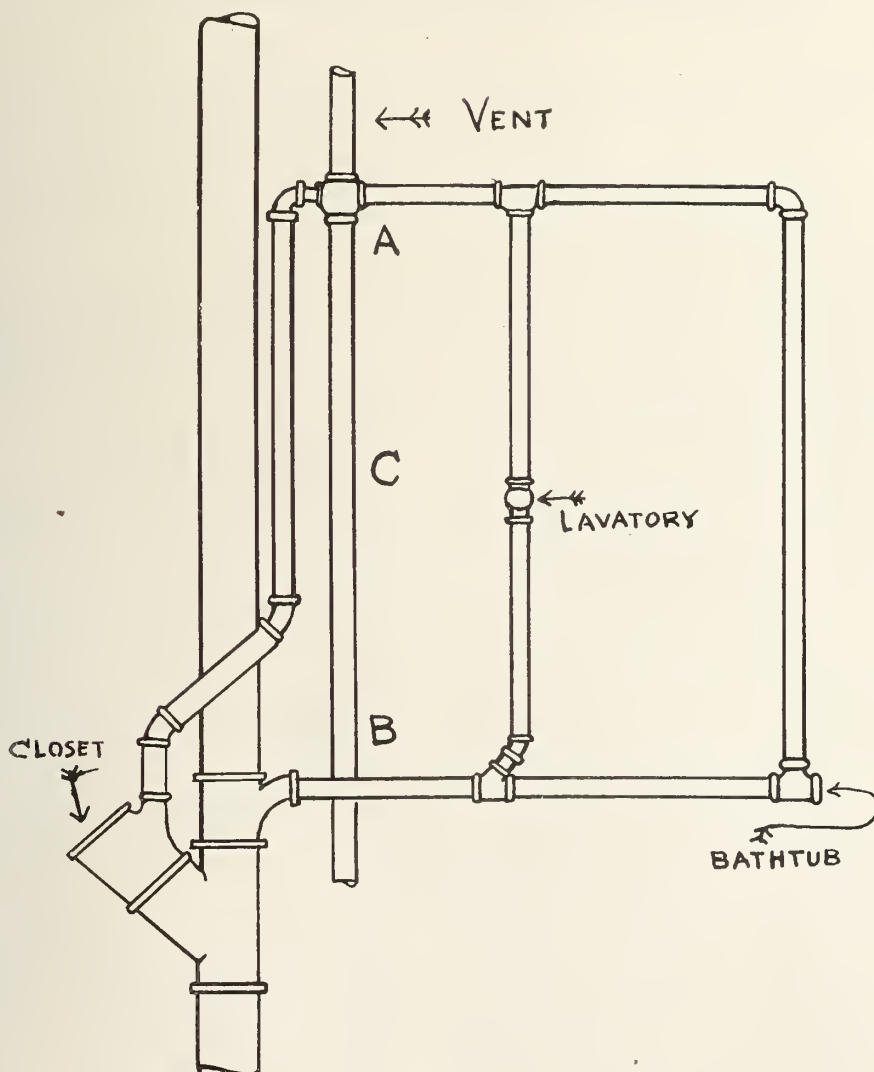


Fig. 3.



## Best Gathering on Record, the Verdict

**Annual Dance and Euchre of Montreal Master Plumbers' Association a Great Success—Everybody Entered into the Spirit of the Entertainment—The Young Played Cards With Those Not Quite so Young, and the Fathers and Mothers Remained to Dance With Their Sons and Daughters—Looking Forward to Event of 1913 Now.**

"What is going on inside," asked a man outside Victoria Hall of a somewhat somnolent policeman.

"What is going on inside?" interrogated the policeman, in great surprise at such ignorance. "Why this is Wednesday night, and in there the Master Plumbers' Association of Montreal, are holding their annual Euchre and Dance. It is the biggest——" But why quote the Westmount policeman further. Every one of the 250 people who attended the social gathering knows that it surpassed all previous events given by the Montreal Master Plumbers' Association, and that is saying a great deal.

Members of the Association have come to look forward to this annual gathering eagerly. So have their wives and their daughters; therefore, when Wednesday night came, the merry makers gathered from all parts of the city. French-speaking and English-speaking mingled, trouncing one another's ace with utter recklessness, and dancing together in waltz and lancers. The evening gave great opportunity for men to become better acquainted. Large handler and smaller dealer met together, and together they talked of various subjects. Everything nearly was discussed—everything except business.

### Started Cards Early.

The hall had been tastefully decorated, and as the guests arrived they were welcomed by J. R. Meadowcroft, Jas. Ballantyne and the other members of the reception committee. In the big hall, tables had been arranged, and at these the devotees of euchre took their places. Practically every one was a devotee. Young and younger played. It was euchre in the first part of the evening and dancing later.

Of course there were some who could not play. Fine prizes were to be given the winners, and as competition was keen there had to be some to punch the tickets. The work was well done by John A. Gordon, J. E. Walsh, Jos. Thibeault and others. All the gentlemen resisted the entreaties of the young ladies to punch twice where only one punch was deserved. It is impossible to say if this is a point in their favor. To have resisted such young ladies must have required a hard heart. Yet let credit be given for an honest purpose.

### Supper in the Gym.

By eleven o'clock, cards were abandoned, only to be followed by another very important event—the supper. It was served in the Gymnasium below the hall, where beautifully decorated tables had been placed.

During the Euchre Tourney the orchestra had played at intervals. At supper they moved to the gallery of the gymnasium, and then, when the very young people became exceedingly restive, they moved back to the large hall, and dancing commenced.

### All in Grand March.

First there came the grand march, in which all took part. Then a waltz was struck up. Unfortunate the man who could not dance well. There were few of these, however, and they danced any

way. Moreover, the elder people did not depart with the beginning of the dancing. They watched. They danced themselves. They admired their daughters. Oh, there are a lot of entertaining things the middle-aged can do at a dance like that of the Master Plumbers. But principally, on Wednesday night, they danced themselves.

But the best of times must end. Prizes were awarded. The committee in charge, Messrs. J. R. Meadowcroft, president; Jas. Ballantyne, J. E. Walsh, John Watson, John A. Gordon, P. C. Ogilvie, Walter Ryan, W. R. J. Hughes, Jos. Laurier, Jos. Thibeault, Hon. Sec. Arthur Gardner and Secretary W. A. Stanley, said good night; and with the orchestra playing the National Anthem, all left. Outside they passed a sleepy policeman, but none coming from Victoria Hall were sleepy. They were already looking forward to the Euchre and Dance of the year 1913.

## Second Annual At Home of Society

**Toronto Sanitary and Heating Engineers Hold Notable Event—Three Hundred People in Attendance—Programme Was Well Carried Out.**

Toronto, Feb. 3.—The second annual "At Home" of the Toronto Society of Domestic Sanitary and Heating Engineers was held last night. That it was the best event of the kind ever held was unanimously conceded. Chairman Passmore says he will have a better one next year; but he will certainly have to put forth his very best efforts to accomplish that purpose.

The At Home was held in the Canadian Foresters building on College Street. It had many advantages, including a balcony from which those who did not care to join in the dance could watch those on the floor below. The decorations were tasteful and unique and there was excellent accommodation for those who preferred to play cards rather than share in the Terpsichorean pleasures of the evening.

There were fully one hundred and fifty couples in attendance. The number was a pleasing surprise even to the members of the committee who had been sure that they were going to break all records. The committee were kept pretty busy as a result. Chairman A. F. Passmore, in his capacity as general overseer, had so much on his hands that he found little time to join in the dancing. Frank Maxwell, president of the Society, acted in the capacity of treasurer and John Fullerton, as secretary. Garrett Frankland officiated in the box office and Ed. Needham stood guard at the door. The other members of the entertainment committee,

Messrs. J. Wright, C. Hicks, J. R. Seager, A. H. Reed, Geo. Cooper, W. Boddington, W. C. Schultz, J. Sherlock and H. G. Waterman, were kept busy attending to the carrying of the programme, the refreshments and such like. They did their work well.

There were eleven numbers on the programme and a large number of extras were demanded. A creditable feature was the fact that every part of the programme was started and concluded promptly on time.

### The Musical Programme.

The musical numbers were all of a highly enjoyable nature and showed discriminatory taste on the part of the committee.

Mrs. A. F. Passmore rendered a number of selections, one of the most popular of which was "Carissima" and earned merited encores. Mrs. Passmore has a wide range and shows a clarity of tone and enunciation with all the depth and richness of a true contralto voice.

J. E. Fiddes sang a selection by request and made so good an impression that he also was compelled to accord an encore.

The other artists were Vernon Gearing and Charles Emery, both of whom were felicitous in their selections and capable in their rendition. Mr. Emery rendered some comedy numbers which helped to enliven the proceedings.

Cecil Heaton acted as accompanist and

Bodley's orchestra provided the dance music.

It would not do to omit mention of what was really one of the features of the evening—the supper. The caterer outdid himself, providing a meal calculated to satisfy the most epicurean tastes.

The gathering broke up at the hour of two o'clock, this early adjournment having rendered possible by the business-like manner in which the committee conducted the programme.

The gathering included practically every representative member of the trade. The following manufacturing firms and supply houses were represented:

Jas. Morrison Manufacturing Co., Standard Sanitary Manufacturing Co., Monarch Brass Manufacturing Co., Steel and Radiation, Ltd., National Plumbing Supply Co., James Robertson Co., Standard Ideal Co., Toronto Hardware Co., Anthes Foundry Co., United Brass and

Lead Co., Macdonald & Sons, Ltd., Dominion Radiator Co., Warden King, Ltd., Galt Brass Mfg. Co., Dart Union Co., Wolverine Mfg. Co., Ideal Mfg. Co., Detroit, W. A. Porter & Co., Taylor-Forbes Co., Gurney Foundry Co., Pease Foundry Co., Raud Mfg. Co., Toronto Furnace & Cremator Co., Wheeler & Bain, Page, Hersey Iron and Tube Co., Canadian Steam Boiler Equipment, Earsman Bros., Polson Iron Works, Aikenhead Hardware Ltd., B. O. T. Mfg. Co.

## Making a Fight for Uniform Contract

**Builders' Exchange of Montreal, and the Quebec Architects' Association are Hoping to Establish This System—Many Hardships Have Resulted Under the Loose System Which Has Existed for Some Time—The Architect Has Not Been Held Responsible, and if the Proprietor Failed to Accept Work, the Plumber Had Great Difficulty in Securing Payment.**

Montreal, Feb. 13.—Representatives from the Quebec Architects' Association are now in Quebec, seeking of the Legislature in session there for changes in their charter which will enable them to be parties to a uniform contract plan. It is practically certain their request will be granted, so the uniform contract will become a fact, and all those connected with the building trade in Montreal will be freed from one of the hardships which they have faced for years.

Montreal, the metropolis of Canada, is one of the few places where a uniform contract system is not in vogue. Winnipeg has this. Toronto has it. So have the other large cities; but not Montreal or the Province of Quebec. Contractors have been compelled to sign contracts drawn up in a multitude of ways, perhaps in a language which is not their own. The injustice of all this has been felt, and the Builders' Exchange has lately taken up the matter. The architects declared themselves as only too willing to have a uniform contract drafted, but they discovered that a change in their charter would be necessary to effect this, so they have gone to the Ancient Capital.

### Papers Seldom the Same.

The troubles which have arisen under the old free and easy contract system have been many and of various kinds. Every sanitary and heating engineer will be able to recall some difficulty in which he has found himself by reason of signing papers, which are practically never the same.

Often these contracts are signed blindly. Their purpose is not fully understood by the plumber. It is impossible that it should be otherwise, for various architects make out these con-

tracts in various ways. Moreover an English plumber may be signing a contract prepared by a French-Canadian architect in the French language. Now the majority of business men in Montreal have a fair knowledge of both languages, but an English-speaking plumber may very easily miss the significance of some phrase written in French.

### Signing Earnings Away.

But this is not the worst flaw in the present loose system. Its greatest fault is that in signing these contracts the plumber is often signing his earnings away, for in the eyes of the Quebec law an architect has few powers. He can not be held responsible if a contract is broken. Let the proprietor repudiate the work done and it is exceedingly difficult for the plumber to get his money.

The new contract, which is already drafted, has been prepared after careful consideration by the lawyers of both the Builders' Exchange and the Architects' Association. It complies fully with the Quebec law. The name of the proprietor for whom the building is to be done has to be upon every contract. The man doing the work, is thus guaranteed payment.

### No Guess Work Now.

The contracts, moreover, will be drawn up in both languages, so that a man signing a paper, may know exactly what its meaning is. He will not have to guess the purport of some unfamiliar word.

The main clauses for all styles of contracting will be plainly printed. There will be space left for special clauses, but the intention has been to make these as little necessary as possible. The aim has been to get the forms complete, so

that architects may fill these in, and contractors may study them intelligently. This has not been always possible under the old system.

### IS LEAD WOOL USED?

Editor Plumber and Steamfitter,—Is lead wool preferable to molten lead for making joints on a 12-inch water main where there is a heavy pressure?

W. H. M.

Penticton, B.C., Jan. 22.

Lead wool is used for caulking joints in different places, more in particular under water or in damp places. I am not convinced that it would be better than molten lead for the purpose named.—D. C. H.

### A DIFFERENCE IN THE HUBS.

Editor Plumber and Steamfitter,—Is there any difference in the hubs on the water mains and those on ordinary soil pipe? Also, what are the common lengths of cast iron water pipe in feet?

James Splann.

The hubs on the water main pipe are heavier than those on ordinary pipe, so that they can be caulked tighter to stand up under a very heavy pressure. Some hubs have a groove inside that the lead may not work out. The length of the pipes is generally twelve feet, some of the smaller sizes, as two-inch, coming in lengths of nine feet.

### NEW COMPANY.

Among the new companies recently incorporated in British Columbia is the Western Plumbing Supply Co., with a capital of \$15,000.



# Methods of Sewage Disposal

No. 2

By Charles W Chandler, Toronto.

## MODERN SEPTIC TANK.\*

The modern septic tank (sometimes called a scum or putrefaction tank) consists essentially of a water tight chamber of suitable capacity which contains a large body of sewage undergoing the various processes of fermentation and putrefaction, and through which the sewage flows slowly and nearly continuously as it is delivered at the outfall, the inlets and outlets being submerged to prevent a disturbance of the surface or floating scum. When discharged into a septic tank sewage undergoes a physical separation or sedimentation in which the heavier particles are drawn to the bottom by the force of gravity, and there contribute to the accumulated sludge, while the lighter particles float to the top of the liquid, thus forming a scum on the surface, leaving the intermediate depth comparatively clear. At this stage of purification the sewage contains a greater or less amount of air or free oxygen, according to the length of time it has been in the sewers and subject to bacterial action. The aerotie bacteria in the sewage, however, rapidly deprives the liquid of its oxygen, while at the same time the layer of scum on the surface, and the aerotie bacteria therein contained, prevent oxygen from the atmosphere from penetrating to the lower depth of the tank. The sewage thus being deprived of oxygen, is in suitable condition for anaerobic action, which is the most effective in liquefying solids, and the tank then becomes the seat of two very distinct actions. In the interior and on the bottom of the tank anaerobic bacteria attack the solid matter, both nitrogenous and carbonaceous, and convert it into simple compounds suitable for the requirements of aerobic bacteria. On the surface of the liquid, in the presence of air, on the other hand, aerobic bacteria are busy reducing to still simpler forms the products liberated by the anaerobic bacteria, and at the same time aerobically reducing the scum on the surface of the sewage.

The sludge on the bottom of the tank is subjected to a physical as well as a biological action. Gases produced by the liquefying bacteria in the sludge, in rising to the surface of the liquid, entangle or saturate, as the case may be, some of the solid matter on the bottom. The solids so affected, buoyed up by the gases, rise slowly toward the

surface of the sewage. When near the surface the gas becomes liberated and the solids again are carried by the force of gravity to the sludge in the bottom of the tank. This physical action is going on constantly, night and day in a septic tank. Bubbles of gas carrying sludge can at any time be seen rising to view in the tank. During the vertical movement of sludge in a tank it is carried in a horizontal direction toward the outlet, a distance proportioned to the rate of flow through the tank, and the time consumed in traversing the vertical distance from the bottom of the tank to the surface of the liquid and back again to the bottom of the tank.

The septic tank process of sewage purification is not a complete process in itself, for while the liquid effluent from the tank contains but little suspended organic matter, it is highly charged with putrescible matters in solution, which is the chief cause of the contamination of lakes and streams, and a higher purification is in most cases absolutely necessary.

The effluent from a septic tank is entirely devoid of oxygen, and when freely exposed to air by falling in a cascade over baffle plates, or sprayed into the air it almost instantly will absorb 70 to 75 per cent. of the air. Subsequent treatment of septic effluent therefore should consist, first, of a thorough aeration and then an intermittent application in their films to porous well-aerated soil, sprayed continuously over filter bed of coarse material, or subjected to aerobic treatment in contact beds, so that putrifying bacteria can reduce the ammonia compounds to stable nitrates.

The bacterial action of a septic tank is more satisfactory, if the sewage is of a uniform character, and if it is concentrated rather than diluted. Warm weather increases the action of the anaerobic bacteria. No septic tank shows good results when first put in operation; it is necessary that the process of cultivating the anaerobic bacteria be carried on for some weeks before the liquefying process becomes efficient.

While there is no difference in efficiency between open and closed septic tanks operated in mild climates, in cold climates the closed tank will be found to possess distinct advantages over open tanks. The advantages consist in the exclusion of snow, which in northern latitudes is no inconsiderable amount, and in the maintaining of a higher temperature more suitable for the activity of

bacteria than can be maintained in an open tank. It also conceals from sight the fermenting and putrefying mass of sewage, prevents the nuisance of odors, protects the sewage from flies, and is a protection against wind and rain. Covered tanks should be provided liberally with ventilation ducts or outlets for the escape of gas liberated by the decomposition of sewage.

## MUELLER CONVENTION.

The annual convention of the H. Mueller Mfg. Co. traveling salesmen was held at the general offices of the company in Decatur, Ill., and was attended by salesmen who represent the concern in all parts of the United States, Canada and Cuba, together with such members of the office-force as are directly connected with the marketing of the Mueller product.

The Mueller Co. will this year be represented on the road by 30 traveling salesmen, the largest force it has yet had. A new factory for Canadian business will be established. This factory will be located at Sarnia. This factory will start with probably 150 men. This will be the biggest improvement that the company will make this year, the home plant having undergone a general overhauling during 1911 and numerous additions and enlargements made, so that its present capacity is greatly in excess of anything in its previous history.

## UNDERGROUND LAVATORIES.

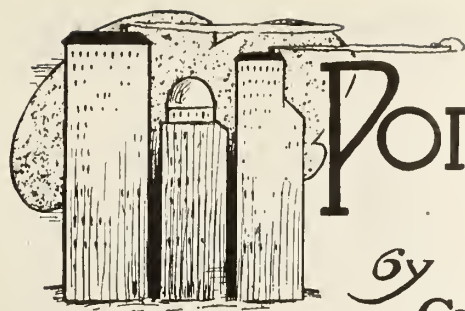
Montreal.—The Board of Control has decided to recommend the immediate construction of five underground lavatories, the entire cost of which will be \$175,000. Time after time the need of these has been pointed out, but owing to bad administration at the City Hall the money needed was not available. Now things are different.

## A New Firm.

Weyburn, Sask.—A new plumbing and heating firm have announced their intention of opening for business in this city, to be known as The Scott Company. R. I. Scott is the head of the new firm.

\*The author desires to give credit to J. J. Cosgrove for much of the information bodied in this sketch.





# POINTS ON HEATING

By

CHAS. H. DENISON



## Chapter 24.

In making up the coil, it will be found very convenient to start directly from the steam main, put in the swing joint (for expansion) and then construct the upright (or "Harp") part of the coil, and from that point begin to run the pipe toward the return end. I know that in many cases, right and left ells are used at the point where the angle is made, but the right and left ells are seldom tapped out correctly and to catch a pipe at this point having a right thread on one end and a left on the other, requires much time and patience. Usually fully as much or more than the average fitter possesses. I prefer to use right and left couplings and to make the connection at some point where one can have a chance to snap the pipe out of the hangers thus giving a better chance to catch the threads. After the "Harp" is made and fixed to place, it will not be necessary to take any accurate measurements for some time. The pipes which have been previously gone over and the couplings changed end for end, can now be used, and rapidly screwed to place. From four to six or ten pipes (according to the tapping of the header) can be run conveniently along in the hangers. These pipes vary in length from a few inches to a foot or more in length, and, by one's observing a bit, the pipe can be so carried that the couplings do not come over each other, thus making easier work for catching and screwing to place.

If the point of joining the right and left hand couplings be made some twenty or thirty feet from either end (most convenient in running the coil) it will be found that the only pipes necessary to be cut for the long run of the coil will vary in length from about one foot to three. These measurements can be taken and cut and threaded at the nearest bench, and the coil then made up complete. I am aware that some fitters would prefer to use the right and left "ells," and make these last short pieces of pipe so connect; but as I have observed both methods tried out for speed, I can say that the man who used the right and left "ells" did not always come out first in the contest.

In constructing the "Harp" or upright section of the coil, the distances between the openings wherein the pipes are screwed are about two and one-half inches apart. Measure the distance between these holes (centre to centre) and then cut the pipes just that distance, longer or shorter, than the preceding pipe, as you begin on the longest or the shortest pipe of the "Harp."

On a very long coil, it is wise to anchor it in the middle of its horizontal length and allow the expansion to take place at both ends, suitable swings being provided so that the ends will have sufficient room to expand and the steam supply branch and the drip being likewise provided for. Many fitters place the air valve at the extreme top of the return header, but it will be found if it is located somewhat lower, the air will be more thoroughly taken out. On big jobs of coil heating the vacuum system is made use of with great success, and the coils kept hot their entire length with very little care and trouble. After being thoroughly tested out and everything found to be correct as to leaks, expansion, heating capacity and circulation, the coil may then be painted. In many cases asphaltum is used for this purpose, but it is not strictly necessary, as a good lead paint which can be made to correspond in color with that of the building may be used, thus not bringing the coil into the prominence that a contrast of colors would give. The construction of the other styles of coils alluded to in this article has not been given, as it is pretty much the same all through. If you can build the "Harp" coil right, you should have little trouble in making any other style, unless perhaps it might be a corner radiator and your ells at the turns did not line up in a vertical position. A little careful measuring at the start should obviate any such difficulty, and the ells should all be made on to the pipes at the bench at which, any time, do all the pulling and labor that can be accomplished at that place. "Strong arm" work on a "wiggly" pipe or branch don't pay. It causes too many leaks when you think you'll never have 'em.

We learn good points, sometimes, by

comparison. I am lead to that remark because, the other day while looking over some papers that have been accumulating for some time, I ran across the "notes" of the very first steam job that I ever installed.

If you have been at the business for say anywhere from fifteen to twenty-five years, fish out your first contract (if you have preserved same) and look it over with the critical eye acquired by all those years of experience and perhaps you'll see, that, after all, you have made some progress although it may have been so gradual that you have failed to notice it. There were before me several pieces of paper somewhat yellowed with the passage of nearly a quarter of a century of time. At first, I had evidently attempted to get out some kind of a schedule, for one piece of paper was ruled and I had started to arrange the various articles going into the system in some kind of order.

Evidently time must have pressed, or else I had given the matter up as a bad job, for the schedule remained incomplete.

In various places I found the different parts which go to make up a heating estimate, and finally I found the total of the cost and a guess at the profit in the job. What's the use of all this reminder of old times? Merely this: not many moons ago I went into a heating shop for some information and the boss had to refer to a job he had put in during the past year. When he found the papers, they were a mixed up mass of items very similar to the "notes" on that first job I put in some twenty-five years ago and this same shop pretended to find the work necessary to run over a dozen steamfitters at that very time. From which it would seem that all in the craft had not yet gotten down to system and modern methods even though we now write the date 1912.

My family and that of the customer were friends—before the job was installed—but a coldness developed afterwards. Not that the job failed to heat well; it did and always has. In fact I am proud of the way that job has always worked and can point to it this very day as a good working steam heating installation.

I was slow in doing the work (being

(Continued on page 17.)



# Complete Course in Sheet Metal Work

Number 1.

It is not our purpose to teach you a lot of arithmetic, algebra, history of architecture, etc., etc. What we aim to do is to teach you how to draw patterns for anything made in sheet metal, how to construct work by the best methods known to the trade, and how to erect metal ceilings, roofings, etc.

The ability to read and write, understand simple arithmetic, a willingness to work, and some perseverance are all the stock in trade you need. We will furnish the rest.

Before beginning to draw, you must, of course, have some drawing instruments. These can be of the cheapest, and are fully described and illustrated in the first part of the course.

Your first drawing begins with fig. 13. From this up to fig. 23 are simple exercises to bring into play the different tools.

The first thing necessary in pattern drafting is, of course, a drawing outfit. When the student has mastered the details and principles of pattern drawing, he can then afford to get an expensive outfit, but for the start the cheapest of instruments will do.

First, get a drawing board. This should not be a toy affair, but should be large enough for practical work, say about 2½ or 3 feet wide by 4½ or 5 feet long.

Some schools recommend their students to get boards about 18 in. x 24 in. This

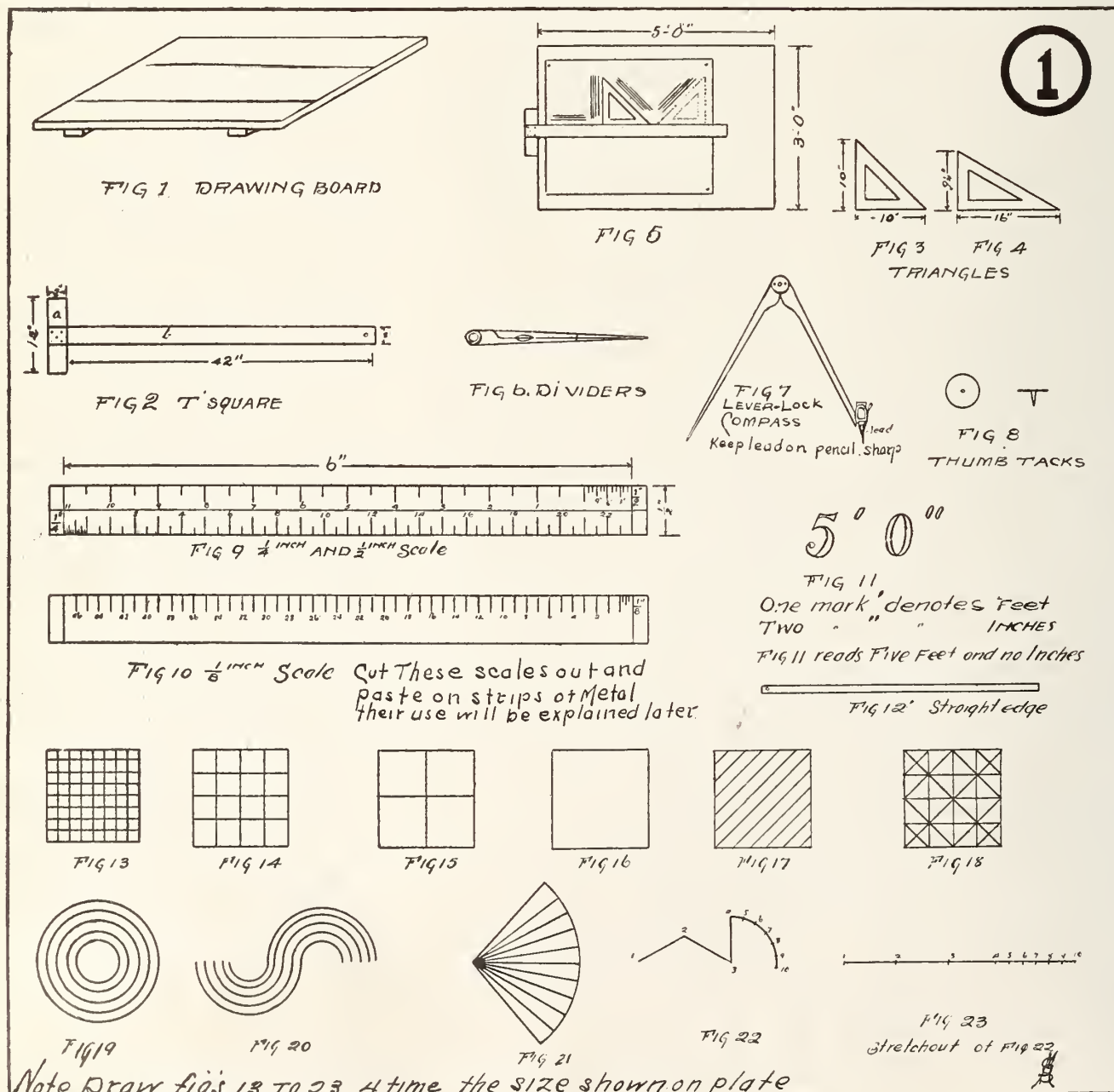
size is of no benefit to anyone learning sheet metal pattern drawing.

The student should develop all of his patterns full size, transfer them to metal, cut them out and form them up, and solder them together. In this way only will he learn to draw patterns for anything he wants in sheet metal.

The drawing board should be made of soft and well seasoned pine, tongued and grooved or well joined, and should have battens across the bottom to keep it from warping. See fig. 1.

It should be a perfect rectangle; that is, all of its sides should be right angles. It would be well to have a carpenter square this.

Next a T square is required. See fig.



2. This should be of hardwood, and should be about 3-16 of an inch thick. The head "a" should be at right angles to the blade "b." It should also have a movable head, which would allow the blade to be turned at any angle when required. Put a hole in the end to hang it up by to keep it from warping.

Next a triangle, shown by fig. 3, is required. (Fig. 4 is not necessary for the present). This triangle should be of the same material as the T square. Square its two straight sides with a steel square.

A pair of dividers is required for dividing and transferring spaces.

A pair of compasses for drawing circles and curves.

Some thumb tacks for holding down the drawing paper.

A medium hard lead pencil, say about a 2-b. Keep a long, sharp point on the pencil. Accurate work cannot be done with a poor point.

Use soft rubber for erasing, and touch light.

A 2-foot rule with  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  divisions.

A straight edge or good, thick yard stick will be found useful.

Some light colored paper for drawing on. This can be ordinary wrapping paper, or better still, tailors' pattern paper.

The scale rule shown by figs. 9 and 10 can be cut out and pasted on a piece of wood or metal, and though small, will serve to illustrate the use of the scale rule later on.

Draw the exercises shown by figs. 13 to 21. These are intended as exercise for the different tools.

In figs. 22 and 23, we have a simple problem in sheet metal work.

Fig. 22 represents the detail of an irregular shape which we wish to form up on the brake.

Fig. 23 represents the stretch out of girth of fig. 22.

Draw fig. 22, and off to one side draw a straight line for the stretchout or girth. Set one point of the dividers at 1 and the other at 2, and transfer this distance to the straight line; do the same with the distance 2 to 3 and 3 to 4.

We cannot transfer the distance from 4 to 10 in one operation, so we divide the curved part into equal spaces and transfer each part separate. The stretchout represents the exact width of metal necessary to form fig. 22.

## POINTS ON HEATING

(Continued from page 15)

somewhat inexperienced) and in cutting a hole in the parlor ceiling for a steam pipe to pass through to the bed room above, I managed to take out about a yard of the ceiling which was in very

poor condition. The lady of the house and I had an argument right there and then, from which a coldness developed which lasted several years. Of course I should have paid for the damages without question, but I could not see it in that light at the time. A fairly drawn contract containing an item as to damages would have saved all questions; but at that time a large percentage of the steam work in that section was done without any contract whatsoever. Think of it nothing to show just what you should do, or should not. Not the scratch of a pen to tell of the amount of radiation to be furnished nor the price paid.

Pretty loose way that, don't you think? and also its a cinch that the fitter generally did more than he agreed to. Perhaps that is the place where the idea originated that those in the plumbing and heating business should furnish (free), so many extras as, at one time, was customary.

A man going into a house to bronze the radiators, for instance, did well if he got out without bronzing several picture frames or chairs, or perhaps "grandfather's clock" or even the baby's shoes, all of which cost little, but which took up that much more time on the job.

I can see, now, that I killed hours and hours on that job by the manner in which I cut up the piping. I'd cut up one measurement, put on a fitting and then march to the place where the pipe was to be placed and screw the measurement into place. Of course the helper went along also, usually, and then we took another measurement and went back to the bench and cut out the pipe.

Any good reasonably good fitter of to-day knows that such a course of proceeding on a job of a dozen or more radiators, would consume enough extra time to "can" him.

I also recollect the dies that I possessed when this job was put in. They were solid dies and second hand at that. It was all that the helper and myself could do to cut a thread on an inch and a half piece of pipe. The two inch die worked easier, for which I gave due thanks. There isn't a blamed tool that I then had that I would give shop room to to-day, unless, perhaps, it was some old pipe tongs and they are only good for building pipe coils as stated in a previous article. As an instance of how confidence assists us. I will mention the setting up of the boiler on this job. I hired two extra men for that day which with myself and the helper, made four men for the occasion and I remember that we were nearly all day putting around getting it together and "trued up." I could take one good husky helper and working right smart, do the same job now in two hours and make a better job of it besides.

Did not know just where I was at, you see, and had not planned out the work ahead and so, perhaps, there is some excuse (even to-day), if a customer gets rather cranky when the journeymen putter and putter around, squandering hours on jobs that might be done in far less than half the time they consume.

When we finally got ready to "test out" the job I committed one great blunder, to my way of thinking, and that was in allowing the owner to be present when we first "fired up." He requested me to let him know when we got ready and like the goose that I was, I did so.

As we had several leaks, he nearly had a "conspicuous fit" and circled around somewhat prominent, looking for flaws in the job. It's a mistake to allow the owner on the job until you are dead sure that it works all right, for he will always have an eye out for any defect that appears, no matter what you do to it. No owners present to-day for mine until I get good and ready for them.

But the greatest mistake I made on that job did not appear until some days after it was completed and this mistake, also, might have been entirely avoided had I but had a good and sufficient contract by which to be governed.

About ten days after the work was done I happened to meet the owner and mentioned the fact that some cash would be agreeable, as nothing as yet had been paid upon the job. "All right," he said, "come over to the bank and I'll give you a check for part of it. I am going to hold back \$100 until spring, as I want to see how the job is going to work." Now there wasn't more than \$100 in that job for me and you can imagine, some of you who have had a similar experience, just how I felt about the matter; yet say what I might, nothing would change his determination and I was compelled to wait nearly six months before I could get a final settlement. How do they pay to-day? They pay as per the exact reading of the contract, whatsoever it may be. Sometimes in a lump sum, sometimes in installments as the work progresses, and then again in perhaps thirty days, or so; but you can bet that they pay. My collector sees to that.

## WHY USE GALVANIZED INSTEAD OF BLACK PIPE FOR WATER SUPPLY?

Editor Plumber and Steamfitter,—Why is it that in plumbing work they use galvanized, instead of the black pipe?

O.

Because the black pipe will, sooner or later, rust and discolor the water. Also, it will, after a time, rust up and fill the pipe, while, generally, the galvanized pipe does not.



# Constitution and By-laws of Ontario Body

New Booklets Containing Same Are Being Issued to Members of the Ontario Society of Domestic Sanitary and Heating Engineers.

THE constitution and by-laws of the Ontario Society of Domestic Sanitary and Heating Engineers have been issued in booklet form. They are as follows:

## Constitution.

1. This corporation will be known as the Ontario Society of Domestic Sanitary and Heating Engineers.

2. The Society shall have the right to purchase, acquire, and hold all lands and property necessary in order to carry out the objects and purposes for which incorporation is sought, provided that the value of the real estate held at any time for the actual use of the Society shall not exceed Ten Thousand Dollars (\$10,000); and may mortgage, sell, rent, assign or otherwise dispose of the same as may be deemed expedient and in the interests of the corporation.

3. The Society shall have and possess the power to make or become parties to promissory notes, bills of exchange and negotiable paper made, drawn, accepted or endorsed or otherwise executed in accordance with any by-law of the Society made in that behalf, and every such instrument executed as aforesaid shall in no case require the Seal of the Society to be affixed and no officer of the Society so making or drawing or accepting or endorsing any such instrument for the Society shall be individually liable thereupon.

4. The Constitution, Rules and By-laws of the Society now in force respecting the admission and expulsion of members and the management and conduct generally of its affairs and concerns in so far as they are not inconsistent to the laws of this Province shall be the rules and by-laws of the Society provided, always, that this corporation may from time to time alter, appeal or change in whole or in part such rules and by-laws in manner provided, and all such by-laws and amendments shall when approved by the Governor-in-Council have the force of law until repealed.

5. All property now owned by or held in trust by the Society is hereby vested in the corporation and shall be applied solely for the purposes of the corporation, and all debts, claims for subscription or contributions of members and other rights accruing to the Society under its Constitution and By-laws shall be vested in the corporation constituted by this Act; and the corporation shall be charged with the liabilities and obligations of the Society.

6. No member of the said corporation shall be liable for the debts of the corporation beyond a sum equal to the amount of his indebtedness to the corporation unless he shall have made himself personally liable therefor.

7. Any member of the Society, not being in arrears, may retire therefrom and shall cease to be such member by giving notice on the forms required by the by-laws and thereafter shall be wholly free from liability for any debt or engagement.

8. Every member expelled or voluntarily retiring from the Society or whose name shall be struck off the list of members for any of the reasons mentioned in the Constitution and By-laws shall forfeit the right of membership and return to the Society Certificate or Certificates and all or any other properties of this Society that may be in his possession.

9. The rents, revenues and profits, arising out of every description of movable or immovable property belonging to the corporation, shall be appropriated for and employed in the exclusive use of the corporation, the construction and repair of the buildings required for the purposes of the corporation and the payment of expenses legitimately incurred in carrying out any of the objects relating to the aforesaid purposes.

## By-Laws.

We, the Sanitary and Heating Engineers of Ontario, deeming it desirable to form a Society of Sanitary and Heating Engineers for the Province of Ontario, do hereby constitute ourselves The Ontario Society of Domestic Sanitary and Heating Engineers and agree to use our best endeavors to organize the Sanitary and Heating Engineers in the whole province, to the end that we may create and foster feelings of fraternity and social intercourse amongst members of the craft, and in addition the promotion of the following special objects, viz.: the advancement of the trade in its sanitary, heating, commercial, mechanical and scientific departments; also, for its protection against imposition, injustice or encroachment upon its common rights and interests, for the encouragement of the educational and inventive talent of the members of the trade generally, and for the dissemination among the public of a true knowledge of sanitary science and principles. To promote amicable relations between the public and members of the trade, and for the mutual benefit

of such members of the Society as may be in need of same.

## Name.

1. This Society will be known as The Ontario Society of Domestic Sanitary and Heating Engineers.

## Officers.

2. The officers of the Society shall consist of three Directors from whom shall be elected President, one Vice-President, Secretary and Treasurer.

## Election of Officers.

3. The officers of the Society shall be elected at the Annual General Meeting of the Society each year; the said election to be by ballot, a majority of ballots to elect.

## Committees.

4. The Society shall have the following Committees, namely: The Executive, Sanitary, Heating, Arbitration, Auditing, Legislative, Apprenticeship, Examination and Educational Committees.

## Executive Committee.

5. The Executive Committee shall be composed of the Directors of the Society and the Chairman of the Sanitary, Heating, Arbitration, Auditing, Legislative, Apprenticeship, Examination and Educational Committees. The President shall be Chairman of this Committee. This Committee shall have power to call meetings and do all things as specified by the Constitution and By-laws, and any other business which may be referred to them by the Society.

## Sanitary Committee.

6. The Sanitary Committee shall consist of three members whose duty it shall be to take charge of all Sanitary questions appertaining to the profession.

## Heating Committee.

7. The Heating Committee shall consist of three members whose duty it shall be to take charge of all heating questions appertaining to the profession.

## Arbitration Committee.

8. The Arbitration Committee shall be composed of three members whose duty it shall be to have charge of all matters of dispute between the members which shall be referred to them by the Society.

## Auditing Committee.

9. The Auditing Committee shall consist of three members, all elected by ballot, whose duty it shall be to audit all bills, examine the books and vouchers yearly and perform all other duties appertaining to finance which may be sub-

mitted to them and report to the Society at its Annual General Meeting.

## **Legislative Committee.**

10. The Legislative Committee shall consist of three members whose duty it shall be to take charge of all legal and legislative matters.

## **Apprenticeship Committee.**

11. The Apprenticeship Committee shall consist of five members whose duty it shall be to take charge of all matters relating to Apprenticeship.

## **Educational Committee.**

12. The Education Committee shall consist of three members whose duty it shall be to take charge of all Educational matters.

## **Members.**

13. No person shall be a member who has not passed the Examiners and the requirements set forth by them from time to time.

## **Examination Committee.**

14. The Examination Committee shall consist of three members whose duty it shall be to take charge of all questions of examining into the fitness of persons presenting themselves to join the said corporation. The said corporation shall have the right,

(a) To appoint an examiner or examiners for the purpose of ascertaining and reporting upon the qualification of all persons who shall appoint themselves for admission and enrollment as members.

(b) To make all necessary rules, regulations and by-laws respecting the admission and registration of members in all matters relating to the discipline and honor of the profession.

(c) To regulate and fix the annual and admission fees payable by members and to make all rules and regulations and by-laws necessary for the proper working or carrying out of the provision of this Act.

## **Appointment of Committees.**

15. The Chairman of the Sanitary, Heating, Arbitration, Legislative and Apprenticeship, Examination and Educational Committees shall be nominated and elected by ballot at the Annual General Meeting by a majority vote; the Auditing Committee shall be elected by ballot at the Annual General Meeting by a majority vote. The elected chairman of the Sanitary, Heating, Arbitration, Legislative, Apprenticeship, Examination and Educational Committees shall choose the remaining members for such committees from the members of the Society.

## **Vacancy.**

16. Any vacancy which may occur in any of the committees during the term of office shall be filled by a member appointed by the Executive Committee for the unexpired term.

## **Quorum.**

17. All committees shall have a majority of members present to transact business.

## **Members.**

18. The membership of the Society shall be composed of men of good standing, who are creditably carrying on the trade of Sanitary Plumbing, Heating and Ventilating in the Province of Ontario, in such a manner that will promote and protect the health of our citizens, and to assist in the enactment of a Provincial Act to this end, provided that

(1) Any person practising the profession of Heating and Sanitation within this province on the coming into force of this Act may become a member of the Society, by causing his name to be registered with the Registrar of the Society within three months from the appointment of Registrar and by paying to the Registrar such fees as may be By-law or otherwise be made payable in that behalf.

(2) In case any such person as aforesaid omits to be registered within said period of three months through absence, illness or inadvertance, such person may, at the discretion of the Society be admitted to enrollment as a member.

## **Fees.**

19. The annual fees of the Society shall be payable as follows: Local Committees shall pay five dollars (\$5.00) per member up to ten members, and one dollar for each additional member. And where no Local Committee exists individual members shall pay five dollars (\$5.00) each.

## **Annual General Meeting.**

20. The Society shall hold an Annual General Meeting for the election of Officers, Standing Committees and the reception of the annual reports of the Officers and Auditing Committee and for such other business as may be brought before it; such meeting shall be held on Good Friday in each and every year, at such place as the Executive Committee may direct. Ten days' notice in writing shall be given to the members by the Secretary of the time and place of such meeting.

## **Quorum.**

21. Fifteen members present at any meeting shall constitute a quorum for the transaction of business of the Society.

## **Order of Business.**

22. The following shall be the order of business:

1. The Presiding Officer shall call the meeting to order.
2. Calling roll.
3. Reading the minutes.
4. Collection of fees.

5. Reports of Standing and Special Committees.

6. Communications.

7. Proposals for membership, admission of members.

8. New business and reports of receipts.

9. Adjournment.

When a motion is under debate another motion shall not be entertained unless it shall be;

To lay on the table, upon which the question shall be taken without debate.

If the motion to lay on the table prevails, the whole business shall be laid on the table.

To amend, to refer.

The previous question, when proposed, shall apply to amendments and shall stop all debate.

Subject to the above provisions the meetings of the Society shall be conducted according to parliamentary usage as laid down in "Berbohm's Manual."

## **Assessments.**

29. The Executive Committee shall, with the sanction of a majority vote of a regular meeting of the Society, have power to levy assessments upon the members for the running expenses of the Society.

## **Members in Arrears.**

30. Every member having an unsettled account standing against him in the books of the Society for six months whether for dues or assessments regularly levied shall have no voice or vote until his account is settled, and may be dropped from the roll by a majority vote of the members present, provided that notice of such indebtedness has been previously given to said member.

31. It shall be the duty of each member on changing his place of business or residence to notify the Secretary at once.

## **Charges Against Members.**

32. Any member charged with violating any of the articles of this Constitution or By-laws, or refusing to conform to the decisions arrived at by the Society, shall have his case submitted to the Executive Committee. After careful enquiry and examination into the case, the committee shall report to a regular meeting of the Society, the members to receive notice that the business is to come before them. If found guilty, the accused member shall be dealt with according to the ruling of the Society or may be expelled by a two-third (2/3) vote of the members present. No member shall be expelled without having a copy of the charges preferred against him, served on him ten days prior to the taking of the action against him.





#### **Sells Tinning Business.**

St. Jacobs, Ont.—Henry Gilles has sold out his tinsmith business to A. C. Thoms, who will conduct it at the rear of the hardware store of Mr. Gilles.

#### **Berlin's Inspector.**

Berlin, Ont.—J. G. Buchaupt has been appointed to the office of plumbing, sanitary and garbage inspector. A salary of \$700 a year goes with the position.

#### **Want Five-year Guarantee.**

Niagara Falls, Ont.—The contract for the plumbing and heating of the city hall has been let to J. T. Henderson for \$1,255. The city council will insist on a five-year guarantee.

#### **New Official Appointed.**

Toronto, Ont.—The board of education has appointed Charles Doughty to the position of plumbing, heating and ventilation inspector of schools. His salary was fixed at \$1,400.

#### **Goes to Edmonton.**

James McFarlane, of Vegreville, Alta., who has been in the employ of the A. Lee Plumbing & Tinning Company, has gone to Edmonton to enter the employ of Harry Milne, who is in the tinning and plumbing business there. The latter came from Vegreville also.

#### **Moves to Penticton.**

Penticton, B.C.—Under the name of the Standard Plumbing & Heating Co., L. Hodson, late of Edmonton, has opened the store lately occupied by G. H. Broughton. Mr. Hodson was one of the foremost business men in Edmonton, but the weather did not agree with him.

#### **Ottawa Takes Action.**

Ottawa, Ont.—To Ald. Moise Lapointe, of By Ward, the people of this city will this year owe a somewhat considerable vote of thanks. For many years the question of establishing public lavatories has been mooted in the city, but council after council, while considering the matter, never did anything with the question.

Ald. Lapointe, at last night's meeting of the city council, secured the approval of that body for an initial expenditure of \$20,000 on public lavatories this year. A committee will be formed which will choose the sites for the much-needed public conveniences. In the city's bill, which

will be presented to the Legislature, there will be a clause asking permission to issue a debenture for \$20,000 for this purpose, and supported, as it is by the unanimous vote of council, there is no doubt but that it will carry.

#### **To Extend System.**

St. Thomas, Ont.—The report on the city's central heating plant, as prepared by experts employed by the Richard D. Kimball Co., of New York, contains a recommendation that an extensive addition be made to the plant. The experts employed by orders of the city council to go over the plant and make recommendations for improving it and putting it on a paying basis, recommend that the pipes be extended west on Talbot Street to Metcalfe to reach the Red Foundry, and on Pearl Street to reach the hospital and collegiate institute, as well as south along White, Mitchell, Railway, Wellington and Moore Streets, to reach Alma College and the Erie Mills. The experts figure on heating a majority of the buildings along and near these routes and estimate that the present plant at the old electric light works, with some improvements, will furnish the necessary heat. The cost will be in the neighborhood of \$80,000.

#### **On Extended Tour.**

The Stratford Beacon says: Two of Stratford's prominent business men in the persons of Jos. R. Myers, of the big hardware, plumbing and heating store, Ontario Street, and Thos. Holliday, Jr., of the Stratford Bridge Works, left on the early train yesterday morning for an extensive southern tour. Leaving New York on Saturday by the R.M.S. Trent, they will call at Cuba, Kingston, Jamaica and Colon, Panama, thence along the north coast of South America to Trinidad Island and Barbadoes. From this point they turn northward and call at the West Indies and Bermuda. From Bermuda the homeward trip will be made by the Pickford & Black steamer via Halifax and Montreal.

Mr. Myers has not been in good health since his operation last winter, and Mr. Holliday is badly in need of an extended rest. It is hoped that both may gain the desired end. While the trip is purely for pleasure, neither gentleman would

refuse an order for their respective lines. Stratford may yet figure in the construction of the Panama canal, the big store sending down "locks," while the Erie Street firm could throw a bridge of two across the canal. While absent from the "big store," Mr. Myers' son will conduct the business.

#### **News Briefs.**

The premises of J. W. Hughes & Son, Montreal, were damaged by fire recently.

R. C. Kemp, after twenty years' experience at tinsmithing, plumbing and steamfitting, has taken an advance course in steam and hot water heating.

#### **UNABLE TO LOCATE LEAK.**

Editor Plumber and Steamfitter,—I have recently been on a job for the purpose of locating a gas leak. I searched the place all over from cellar to garret and was unable to find the place where the gas escaped. As this is in a house already occupied, if the floors have to come up it will cause much annoyance and expense. Can you give me any suggestions that can be tried out before we proceed to rip into affairs?  
J. J. E.

Shut off the gas at the meter and thoroughly air the premises. Then begin at the meter with a well aired and fresh nose. If the gas can be smelled, it is quite probable that it escapes from a leak on the outside of the house and follows along the pipe and so into the cellar. We have known of several cases of this kind. In case that the leak does not seem to be at this point, disconnect at the meter and apply the proving pump, putting on the gas pump's very strongest pressure. If any wax has been used in cobbling up air holes or other leaks they may be blown out. While this treatment may cause more leaks, no pains should be spared to detect all the defective places while you are at the job, as it may be a matter of life and death some time in the future. No gas job should ever be passed until it has been thoroughly tested and proved to be tight by a competent person who is thoroughly responsible.—D. C. H.





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The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joints or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

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Steam Radiator Valve.

**MILLER LIMITED, - LONDON, CAN.**



**KERR**

**Steam and Hot Water  
RADIATOR VALVES**

are past the experimental stage.

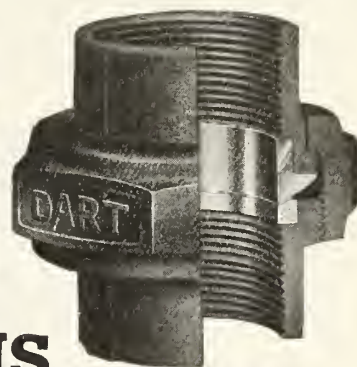
They set the standard for high quality in material and finish and stand the many tests of use.

Note the seats in Kerr's New Pattern J.D. Radiator Valves which insure perfect drainage.

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The pipe ends are heavy malleable, faced with bronze, and when drawn together form a solid bronze to bronze ground ball-joint that will not rust or corrode, nor is it affected by expansion or contraction.

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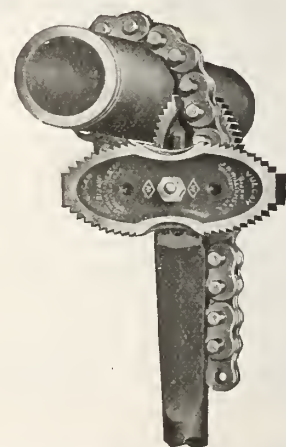
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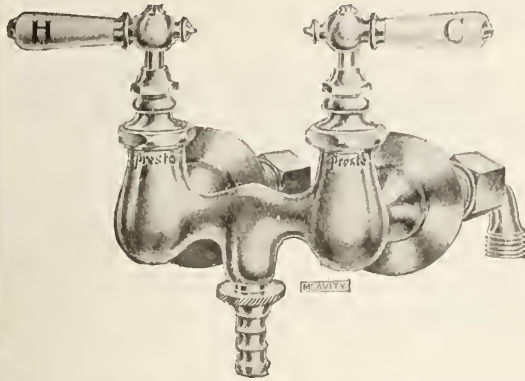
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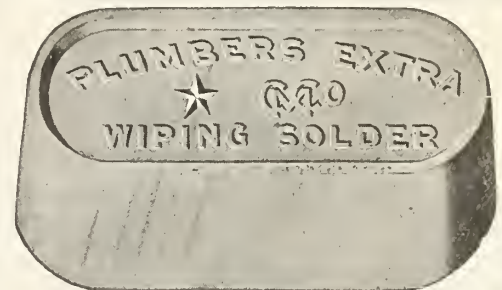
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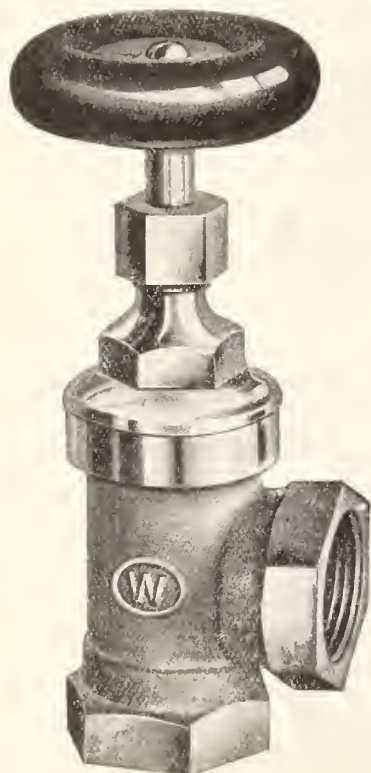
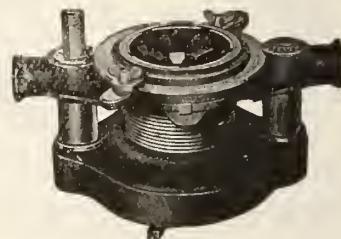
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No. 5



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The above cut shows one of our NEW ROLL RIM,  
HIGH BACK SINKS with Improved Outlet and Large  
Patent Nickel-plated Strainer, with Roll Rim, High  
Back, Right and Left Drain Boards.

This is another of our new Fixtures that is meeting with  
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on BEAVER BRAND GOODS.

## Amherst Foundry Co., Limited

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PLUMBER AND STEAMFITTER



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Been Installed since 1896?

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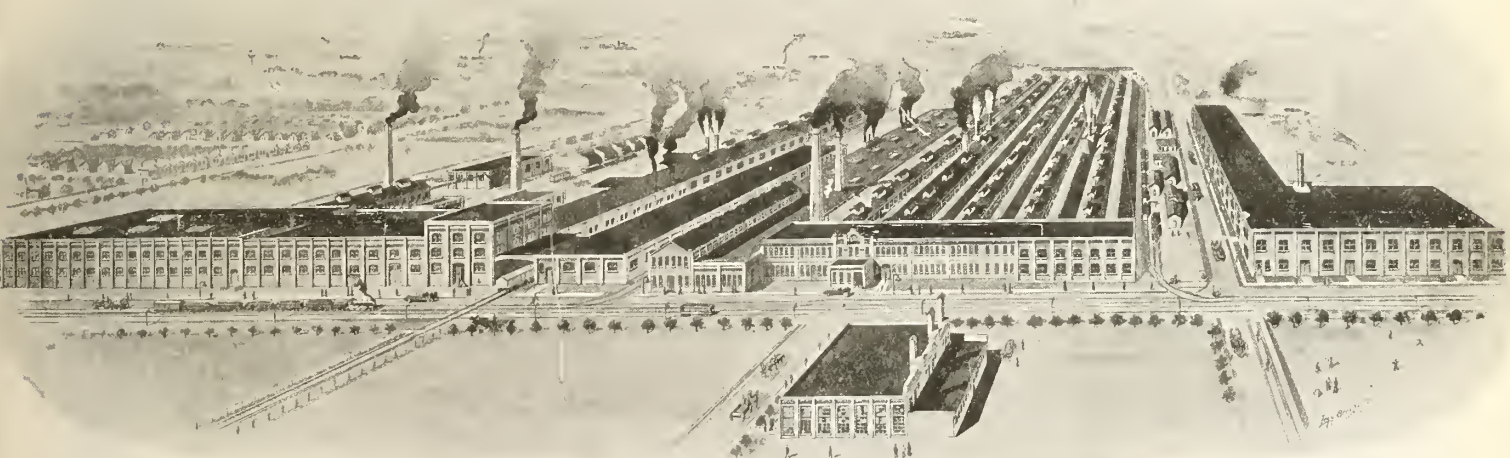
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Attach a Honeywell Heat Generator of suitable size, and in a manner described by us, to the expansion pipe of any large pipe hot water job and try it out for thirty days. If at the expiration of this period, you or the owner are not entirely satisfied with the results, the Generator may be disconnected and returned to us and we will cheerfully and promptly allow credit in full, pay the fitter \$3.00 for his trouble and bear all return charges. Of the 60,000 Honeywell Heat Generators in use, approximately fifteen per cent. of this number have been used in correcting old, unsatisfactory jobs under the above proposition. Your address will bring full details.

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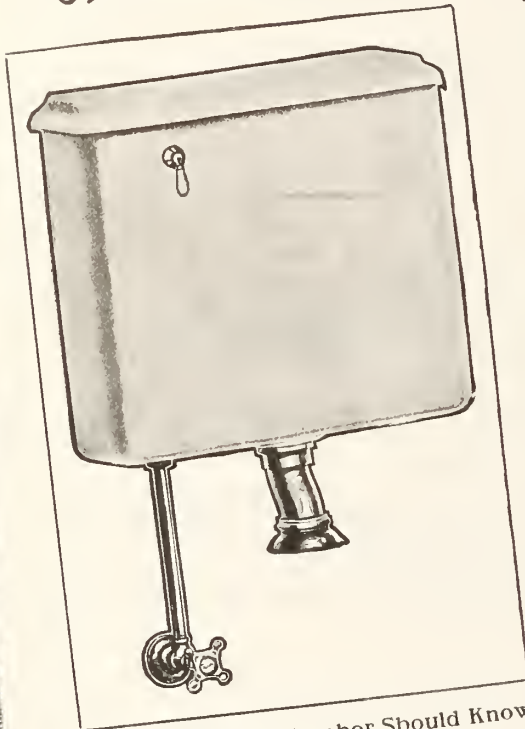
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# Standard Sanitary

## Plumbing Fixtures



Every Canadian Plumber Should Know  
The Features That Recommend

"Standard Sanitary"  
Porcelain Enamelled Low-down  
Flush Tank

Made of porcelain iron and enameled both inside and out, it has many easily recognized points of superiority over the old style wooden tank. There are no linings to give out, and no joints to open up, as is the case with a wooden tank. Nor is there anything to wear out. Its cost is very slightly in excess of the old style tank, and, as there is nothing about it ever to need repair, its first cost is its last cost. It is important to note that this tank is the cheapest to install, being simply hung on the wall in the same manner as our lavatories. You can safely tell your customers that it will last a lifetime.

THE plumbing trade in Canada have shown their realization of what quality means in plumbing Fixtures, by their ever-increasing interest in "Standard Sanitary" products. They have been quick to grasp the business truth that high quality Plumbing Fixtures such as they can be sure of when they supply "Standard Sanitary" are the only safe kind to recommend.

It Means a Lot to Be Able to  
Offer Guaranteed Fixtures

The safeguard of the name and its reputation is backed up by a guarantee that not only provides sure satisfaction for those who install "Standard Sanitary" ware, but that also places the dealer who recommends it in a position of absolute confidence that his recommendation will result in a pleased customer.

The Canadian Trade Is Now  
Taken Care Of From Our  
New Canadian Factory

The building of our new million-dollar factory at Toronto and the opening of show rooms in several important Canadian centres places us in a position to cater to the trade throughout the Dominion in a manner that will more than ever tend to further the harmonious relationship that exists between the trade and ourselves.

**Standard Sanitary Mfg. Co.**  
Limited

Canadian Factory ---Rogee and Lansdowne Avenues, Toronto  
Toronto Store ---55-59 Richmond St. E.      Hamilton Store ---20-28 Jackson St. W.



I'm  
Nye  
the  
Die  
Man



## NO ROOM FOR DOUBT

Remains After Summing up the Merits of

### **The Nye No 25 Adjustable Die Stock**

A thorough elimination of "trappy" and complicated construction was accomplished in designing this tool. Every part plays its part in the direct and simple way that makes for high efficiency. The chasers with which this stock is equipped are made under the celebrated "skip tooth" patent—a feature which has given the Nye Die unchallenged supremacy. They are tapered on both ends, can be easily changed in the stock and are secured against loosening or receding in operation. When the thread is cut the chasers can be released, which does away with the annoyance of "backing off" over the work. Cuts a close nipple, over and under size or a running thread.

There is ample justification for saying that this tool surpasses any other die stock on the market in capacity for work and simplicity and strength of construction.

#### **I Back up this Declaration with a Guarantee**

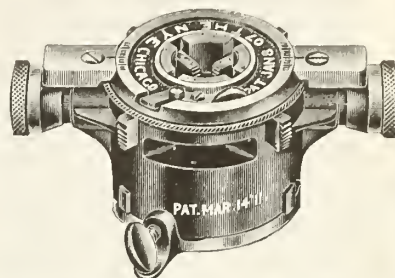
which should dispel all doubt. A simple request by postal will bring the tool to you. Try it out thoroughly—put it to the severest tests, and if it does not do more and better work than any tool of like character you have ever used, send it back. That's my way of doing business. It's a good way too.

Write to-day and I'll send the tool at once.

NYE, THE DIE MAN

THE NYE TOOL AND MACHINE WORKS, 124 N. Jefferson St., Chicago, Ill.

No. 25 Hand Stock



# WROUGHT PIPE

BLACK and GALVANIZED.

SIZES, 1/8 IN. TO 4 IN.

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Ask your jobber for



Brand

## CANADIAN TUBE & IRON CO., LIMITED

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Works: Lachine Canal

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to our salesmen. To some of our best men we pay more.

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You can devote your spare hours to our work, and make more money than you can make from any other commercial position in the same time.

Here is an occasion to reveal your capacity. You are not satisfied to be earning the same salary next year as now.

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You can talk across the continent for two cents per word with a WANT AD. in this paper.





# "KING"

## BOILERS

AND

## RADIATION



PROMPTLY SHIPPED

UNCONDITIONALLY  
GUARANTEED

EXTENSIVELY  
ADVERTISED

EASILY INSTALLED—  
Because Accurately Made.

## Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

# STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

Showrooms, 80 Adelaide St. E.

MONTREAL  
138 Craig St. W.



# An Attractive Toronto Showroom

A Description of the Premises of Robert Ross, Toronto—The Business is Now Conducted by Andrew Ross—Electrical Department Has Proved a Valuable Feature—Some Ross Graduates.

**T**HAT an attractive showroom is a great asset is recognized by all who have kept in touch with trade developments. Certainly, then the premises shown in the accompanying illustration constitute an asset of incalculable value.

The business of the late Robert Ross, sometimes called the "father of the trade," has been conducted by his nephew, Andrew Ross, for some years, under the old firm-name. It is one of the best known in Toronto, even in Canada. The present proprietor has extended it considerably and is at the present time completing an addition at the rear of the building which will very materially increase the size of his workshops. When the extension is finished, the building will be 117 feet deep.

A glance at the accompanying picture reveals the attractiveness of the showroom. It has large windows, opening both on Queen street and Dunn avenue, so that the stock is clearly visible from without and serves as a splendid adver-

tisement. The interior fittings are of the best, and the glass partition at the back gives added light.

## Carries Lighting Fixtures.

Mr. Ross carries a stock of electrical fixtures and does electrical work. Despite the fact that the lighting trade in Toronto is pretty well cut up, he finds the department to be a profitable one. A large and high-class stock of fixtures is carried.

## Good Business System.

Mr. Ross conducts his business on a practical and business-like basis. His system, while not complicated, is sufficiently rigid to keep everything running smoothly. One of the features is a double time check. Each man on the staff keeps his time book, in which he enters up how his time is occupied each day. In addition to that, each employee fills out time sheets at night which account for the work done on the different jobs handled during the day. The sheets

and the books must tally and therefore, serve the purpose of a double check.

Mr. Ross endeavors as far as possible to visit every job after it has been completed. In that way, he is able to see that it has been done properly and also to make sure that no material has been left on the ground. It is the easiest matter possible to leave fittings or tools around on the completion of work.

## Looks After Collections.

Mr. Ross makes a special effort to keep his collections in hand. He has a series of letters which he sends out to people who are on the books. If the first does not bring a response, he sends on the second. If the obduracy of the debtor remains unshaken, number three is sent along. Letter number four is only sent out in rare cases, and it almost invariably results in prompt payment. Each letter is written a little more strongly than the one which precedes it, working up to a climax in the fourth.



A view of the showroom of Robert Ross, Toronto.



### Some Ross Graduates.

The shop of Robert Ross has produced more boss plumbers probably than any other shop in Canada. Here are a few of the best known graduates: Bert Weeks, of Weeks & Co., Vancouver; John Hay, of Grand Forks, B.C., who runs a plumbing business and acts as civic treasurer as well; Frank Rodway and Jack Hammond, of Rodway and Hammond, Winnipeg; R. Robson, Toronto; Sam Adamson, of Griffith & Adamson, Toronto, John Lillie, Toronto; Bob

Yeomans, Toronto, now a member of the city council; Dave Conley, now the manager of a large St. Louis supply house; Dick Rodway, provincial inspector for Manitoba; James Scott, of Riley & Scott, Toronto; E. Gilchrist, chief engineer for the City Dairy, Toronto. Dick Cunneymore, a present member of the Ross staff is a member of the committee appointed by the Toronto city council to overhaul the plumbing by-laws.

Mr. Ross believes that he established somewhat of a record during January.

As everyone knows, the particularly severe weather during the first month of the year created a great amount of jobbing work. Mr. Ross had so much work of this kind on his hands that he could attend to nothing else. No less than 510 jobs were done during the month. One Sunday, when the temperature got down to a particularly low level, Mr. Ross received 47 telephone calls at his residence between the hours of 9 in the morning and three in the afternoon. This constitutes somewhat of a record.

## Testing Air Removal from Radiators

The American Society of Heating and Ventilating Engineers have been conducting a series of tests. The committee in charge of this work have been endeavoring to determine the percentage of air removal from direct steam radiators under the actual working conditions in an office building.

In describing these tests, the "Metal Worker" says:

"In order that some idea may be gathered of the method of making the tests, and the apparatus used, a picture is presented herewith, showing the steam supply main with a mercury column indicating the pressure, and the valve to control the supply to the radiator. It will be readily understood by the engineer that the experimental apparatus has been connected, using fittings and materials conveniently at hand. The fittings immediately above the supply valve have no part in the experiments. The tee at the left of the radiator has a thermometer pocket. On the right side of the radiator there is an automatic air valve of the ordinary type, with fittings, rubber hose and a glass tube leading to an inverted bottle which has practically the same capacity, or will hold the same amount of water as the radiator will hold.

"As steam enters the radiator and the air valve allows the air in it to escape, it passes through the hose and glass tube, through a tube within the bottle to a point above the water line which is established by filling the bottle to the point that corresponds with the amount of water the radiator will hold. Another tube in the bottle drains the water away as the air flows in from the radiator. The flow of water away from the bottle is watched and regulated to avoid both pressure and vacuum, and sufficient time is given after the air valve closes for any steam to condense that may have been passed, and normal conditions to be established. In this way, the water which remains in the bottle



View of Radiator Testing Apparatus.—  
From Metal Worker.

corresponds very closely to the amount of space in the radiator from which the air has not been removed. A number of experiments has shown some variation, but the average of air removal which the committee will give in its report has not been as yet established.

"The committee has under way other experiments where the varying amounts of condensation will be measured as given off by a radiator having varying percentages of air removal. It is hoped that this will aid in establishing some conclusions regarding the relative importance of air removal from radiators.

"With this brief description and the view of the experimental apparatus, it seems evident that the acceptance of the cordial invitation which is extended alike to all interested in the heating trade, as well as the members of the society will be to spend an hour very profitably in making a call, seeing what is being done, possibly getting an explanation of some perplexing things, and it will also give an opportunity for making suggestions for helping the commit-

tee in a gratuitous work that will be widely beneficial."

A report on the tests was made by James A. Donnelly, chairman of the committee before the American Society of Heating and Ventilating Engineers.

The hot-water radiator was used in the test to find the efficiency of a radiator with complete air-removal. It was connected as shown in the diagram, Fig. 1, and the radiator was filled with water through the filling plug on the inlet. The water was then drawn sufficiently low so that steam could be blown across the top connection and out of the petcock, and thus presumably emptying the small pockets at the top of each section of air, and filling them with steam. The water was then drawn off at the bottom of the radiator and steam allowed to follow, so that the radiator was filled with steam which was free from air. After the radiator was thoroughly heated and normal conditions established, records of the inlet temperature and pressure, room temperature, temperature at the return of the radiator and the temperature of the water of condensation were taken.

It was found that the maximum temperature of the water of condensation could not be maintained unless air and steam were continuously blown at the return of the radiator. When this vent was blown, the water of condensation would usually average about 204 deg. with a

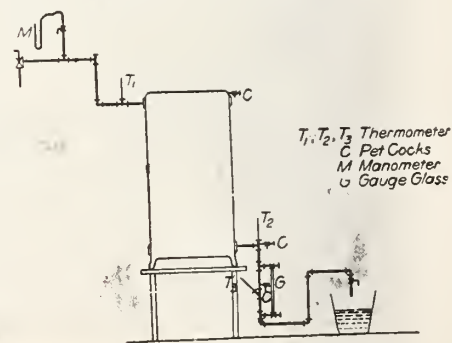


Fig. 1.

temperature at the steam inlet of 217 deg., and a room temperature of about 65 deg. The following table gives a record of a run with complete air-removal.

RECORD OF TEST MADE—JANUARY 13,  
1912.

"Peerless" hot-water radiator, 4 sections, 38 in. high, containing 20 sq. ft. of radiation with 2 sq. ft. added for pipe connections. The radiator was filled with water in order to obtain complete air-removal; the pet-cock on the return end was left cracked open and occasionally blown.

Time.	Steam. Deg.	Return, Deg.	Water, Deg.	Room, Deg.	Conden- sation, lb. oz.	Pressure mercury in.
10:00	216	215	201	60.5		3.3
10:10	216	215	197.5	61.5	1 2	3.1
10:20	216.5	216	197	62	1 2	3.7
10:30	220	219	200	62.5	1 3.5	5.5
10:40	220	219	200	63	1 2.75	5.5
10:50	219	218	198	63.5	1 1	5.5
11:00	219	218	199	64.5	1 2.25	5
11:10	217.5	217	200	65	1 1.75	4
11:20	215	214.5	196.5	65	1 1.25	3.3
11:30	220	219	203	66	1 3.75	6
11:40	220.5	220	207.5	66.5	1 2.25	5.9
11:50	219.5	219	200	66.5	1 2.5	5.2
12:00	218	217	208	67	1 2	4.2
12:10	218.5	218	208.5	67.5	1 2	4.9
12:20	219.5	219	209	67.5	1 2	5.3
12:30	218	217.5	206	68	1 1	4.7
12:40	219	218	207.5	68	1 2.25	4.7
12:50	219	218	207	68.5	1 1.25	4.9
1:00	220	219	207	69	1 3	5.5
<hr/>						
19) 4151	4136	3871.5	1242	3) 20	6.5 19) 89.7	
<hr/>						
218.5	217.7	203.8	65.4	6	12.8	4.7
<hr/>						
961.5 + 14.7 = 976.2 × 6.8 =						
<hr/>						
6640.16 301.82						
<hr/>						
22	= 1.972					
<hr/>						
153						

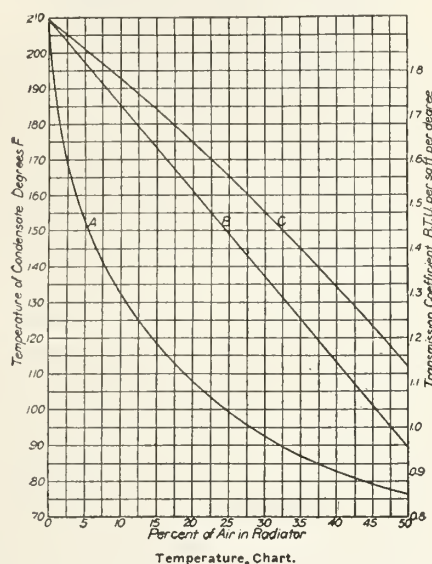
In ascertaining the comparative efficiency of radiators with varying air-removal, the hot-water radiator was filled as before and then a certain percentage of the water was removed. This was presumed to leave a corresponding amount of air in the top of the radiator. When the filling plug and vents were closed, the steam was turned on and the radiator drained to the water-line in the gage-glass. The radiator was given sufficient time as before to reach its normal condition, by reason of the air and iron heating up, when records of the pressure, temperature, etc., were kept for a run of three or four hours.

In this way the efficiency of radiators under these conditions was obtained and plotted as shown on the diagram. The temperature of the water of condensation seemed to serve as an indication of the percentage of air-removal. This temperature has also been plotted as shown.

In the third branch of the subject, which had to do with the percentage of air usually removed from a steam radiator, the apparatus was arranged as shown in Fig. 2. The bottle "B" was filled with an amount of water which represented the capacity of the radiator and the piping from the inlet valve to the water line in the gage-glass. Steam was turned on the radiator and the air allowed to escape through the automatic

air valve "A." The delivery of the water from the bottle was kept at or slightly above the water line in the bottle, until the air valve closed, when the delivery pipe was kept exactly at the water line so that the air in the bottle would be at atmospheric pressure.

It is by no means certain that this method of testing the air-removal is very reliable, as the air is no doubt more or less heated by contact with the steam and is also increased in volume by having its humidity raised, probably to the point of saturation. The amount of air removed, also gases from kerosene oil, varied somewhat in accordance with the manner in which the last loop of the radiator heated. If the circulation was up



the side opposite the air valve, the removal was somewhat higher than if it went up the air-valve side. It seemed usually to go up the side on which the air-valve was placed, due probably to the slight current of air created up that side of the loop by reason of the air valve discharge.

So far as these tests were carried they seemed to indicate a removal of from 90 to 95 per cent. of air, though this is in all probability somewhat greater than the normal air-removal.

Some observations were made upon two other methods of checking air-removal; one by observing the temperature of the water of condensation from the radiator and comparing it with the temperature obtained from tests with known percentages of air-removal, in the case of the hot-water radiator, the other by observing the weight of condensation and comparing that with the hot radiator tests. These observations, however, were not taken in sufficient number to arrive at any definite conclusion.

The automatic air-valve was also placed at the point "C," and the air-removal tested. This seemed to be some-

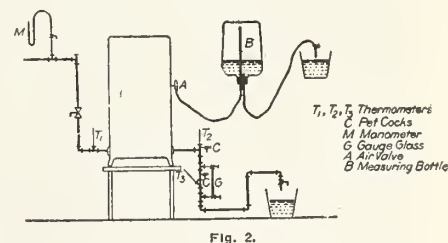
what higher than in its usual location on the radiator. Air-removal was also tried by a pet-cock on the points "A" and "C." These tests gave a higher temperature of water of condensation, and showed presumably a better air-removal.

Some observations were made upon the hot-water radiator after a run in which the radiator contained air. In this, the pet cock at "C" was blown in order to ascertain whether the water of condensation could be brought up to as high a temperature and quantity as in the case of complete air-removal, when the radiator was entirely filled with water. These tests resulted in bringing the quantity and temperature of the water of condensation up to substantially the same points as in the complete air-removal tests.

The co-efficients of transmission with varying percentages of air-removal were plotted on the diagram and serve to show the comparative efficiency of the radiator at any percentage of air-removal.

These tests have not been of sufficient number, nor run under sufficiently accurate conditions, to warrant any definite conclusions. The source from which the steam was derived was such that it seemed to have considerable air in it, and the amount of air seemed to vary at different times. The condensation returns of the building are not used for boiler feed, due to the fear of oil. This necessitates the use of city water, and it is their practice to use considerable kerosene oil, in order to keep the boilers clean and free from scale.

The radiator was located near a window, from which the leakage varied somewhat in accordance with the outside wind and weather conditions. The pressure of the steam was regulated by a back pressure valve and varied in proportion to the service load of elevators and lights. Tests such as these should



be run with steam made from a boiler feed of distilled water, in order that the steam may be free from air, and also from other gases due to the mineral or vegetable matter or oil in the boiler-feed. The testing apparatus is now arranged so that air may be injected into the radiator in known quantities, in order to test the efficiency of thermostatic devices in removing it.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, MARCH 1, 1912

IN THIS issue James E. Farrell of North Bay takes issue with Thomas Watson of Regina on the question of the change in the name of the trade from "plumber" to "sanitary and heating engineer." Mr. Watson believed that the old name should be retained

**REASONS FOR THE CHANGE.** and gave his reasons in a recent issue of *Plumber and Steamfitter*. Mr. Farrell points out that the trade has changed, developing from the basis on which it once stood to its present position. The work now entails a strictly scientific knowledge which lifts the sanitary work into the realm of engineering.

Undoubtedly there are many who hold with Mr. Watson that, the name plumber should not be discarded. To all such we recommend that attention be given to Mr. Farrell's reasoning. We feel with him that the character of the trade has changed to such a degree that a change in name is both logical and essential. It may take years to bring it about but it is bound to come and members of the trade should do their best in the meantime to secure public recognition of the importance of the sanitary and heating branches of engineering work.

IT'S AN ILL wind, etc. The severe weather this winter has meant a busy time for the plumber. He can afford to view the fall of the mercury with equanimity.

IT IS VERY apparent that what is needed more than anything else to effect trade organization in all provinces of the Dominion is the appointment of organizers. It is hard to get results by correspondence. An official of

**ORGANIZERS ARE NEEDED.** Ontario Society made the statement recently that he knew of several places where all members of the trade could be brought into line in a single day if it were possible to send a man to see them. A salaried official who would devote all his time to the work would show immediate results. It is the personal touch which counts in a matter of this kind.

The difficulty is, of course, that money is needed to carry a permanent salaried officer. Sufficient money is not in sight, in Ontario, for this purpose. It is recognized, however, that the move would be a wise one, spelling an assured and lasting success for the society. Would it not be well for the delegates to the Good Friday convention to come prepared to discuss this question and, if possible, to find the means of appointing a permanent officer for organization purposes?

Salesmanship is a great thing now-a-days, whether a man is selling some article or selling his services or his technical knowledge. But buying ability is of importance too, and of importance to the plumber as to all other business men.

**Good Buying as Important as Good Selling.** The master plumber is undertaking to do certain work, undertakes at the same time to put certain articles into that work. The lower the price at which he can secure these, the higher will be his profit.

Some men there are who appreciate this, as is instanced by the present large buying of iron pipe. This article has been scarce. The demand has been rather greater than the supply, yet the price has decreased twice. An anomalous condition of affairs this—a condition which violates the good old economic law of supply and demand, but which is explained by the modern economic law of competition. The call for iron pipe in the States has been small. The supply has been fair, so the prices have been cut and cut. They became so low that Canadian producers feared the duty would not bar them from entry into the Dominion, and so lowered their prices.

This is all very well, but now comes the news that steel operations are becoming extensive once more in the land to the south. This means a demand, with rising prices there and here. The inference would seem to be that the present is a fine time to lay in a supply. If a man can buy at the low figure and use the material when it is selling at a higher sum he will be ahead just the difference in price.

THE COMPLETE course on sheet metal patterns by L. W. Koser began with the last issue and will be continued in every issue from now on.

AFTER SEEING the collection methods, or lack of methods, of some plumbers, one would imagine them to be in business, not for their own living, but for the sole purpose of following out a shiftless form of philanthropy.

WITH ALL IT'S FAULTS, 1911 was a busy, bustling year, with lots of ginger and go. It pulled through what threatened to be a period of depression and has made it possible for 1912 to get off to a flying start.



# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

THERE is wisdom in a multitude of counsel and, according to some men in the trade, there is profit in a multitude of lines.

There are plumbers who do nothing else but plumbing. Then there are those who do both plumbing and heating work. Next in line come the industrious Jack-of-all-trades who do plumbing, heating and tinning. The number dwindles down by process of elimination but there are quite a few at that who do plumbing, heating and tinning and run a hardware store as well. It may possibly be that some other men do all four and in addition handle a little housefurnishing business on the side. But beyond that we doubt if anyone in the trade goes, with one exception, James S. Moir, of Arnprior.

Mr. Moir does a big plumbing and heating business and has an aggressive tinshop department. He has one of the largest hardware stores in the Ottawa Valley and the stock he carries is, to speak in terms of alliteration, vast, varied and voluminous. But that is just the beginning of the scope of his activities. As he handles stoves, it occurred to him that there was no reason why he should not handle that which goes into stoves. Accordingly, he established a coal department and now has a team drawing coal the whole year around.

One article suggests another. The fact that he sold door knobs, window cords, etc., suggested to Mr. Moir that he might with profit to himself carry window shades, wall paper, housefurnishings, etc. He acted on the idea and now has a live and flourishing department devoted to such household goods.

Contractors' supplies and tools figure



Plumber, steamfitter, tinsmith, hardware dealer, housefurnisher, coal dealer and automobile agent—Can anyone beat the business repertoire of J. S. Moir?

in his stock, of course, and this brought forward another suggestion—cement. He now handles large quantities of cement, having sold in one season as many as 6,000 barrels.

He has handled gasoline in large quantities. Develop the thought of selling gasoline and it gradually suggests the idea of selling automobiles. Mr. Moir is now handling E.-M.-F. motor cars and is doing a big business in accessories and automobile supplies.

Plumber, steamfitter, tinsmith, hardware dealer, housefurnisher, coal dealer

and automobile agent. Can any one beat the business repertoire of J. S. Moir?

That he appreciates the importance of the plumbing end of his business is indicated by the fact that he maintains a separate store for that department.

Mr. Moir started in business in 1887, so that he has had a quarter of a century's experience. He has a full appreciation of the importance of the business end that probably accounts for his undoubted success in all departments.

## Four Fatalities Reported.

Montreal, Feb. 13.—Four are dead as the result of a fire in J. W. Hughes' plumbing establishment. Several people who worked on the top floors were reported cut off and alone. Four were said to be missing, and two bodies had been sighted in the building. Five persons are known to have been badly injured.

The fire broke out at twelve o'clock in the plumbing establishment of W. J. Hughes, at the corner of Craig and Little Craig streets. The flames caught several tanks of oil and flashed through the big building with lightning-like rapidity.

## Union Officers Elected.

St. John, N.B.—At the annual meeting of the Plumbers' and Steamfitters' Union last evening the following were elected: Walter Quinn, president; J. H. Foster, vice-president; J. J. Hughes, past president; Arthur Boyle, recording secretary; M. J. Burns, financial secretary; W. J. Morrison, inside sentry; J. P. Hanneberry, J. J. Hughes, R. D. Harrington, N. J. Larecy, board of directors; W. P. Coughlan, vestibule guard.



An exterior view of the premises of J. S. Moir, Arnprior.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## THE LAUNDRY FLOOR.

Editor Plumber and Steamfitter.—Will you be kind enough to tell me in the next issue of the paper what is a desirable material to use for the floor of the laundry? A laundry floor where I am putting in some work is of wood. I told the owner that it was no good for such purposes and he said, "What is?" I suggested cement. Please inform me.  
S. Simpson.

We believe you were right in regard to the flooring of wood. With such a flooring we do not see how the cleanliness necessary to a laundry is to be secured. Regarding other floorings we will say that some material should be used that is impervious to water. It might be cement, it might be stone flagging either natural or artificial, but in the case of using the flagging, special attention should be given to the joints to make sure that they are tight. Tile flooring is sometimes used for the laundry floor.

To give greater convenience to the people who have to work at the laundry trays, a few planks nailed together and laid in front of the tubs will give great satisfaction. This will keep the feet off the wet floor. There should be a good and sufficient trapped floor drain connected with the sewer and the windows and the doors should be well enough constructed to shut tightly.—D. C. H.

## MATERIAL FOR LAUNDRY TRAYS.

Editor Plumber and Steamfitter.—I have a customer who insists on having some wooden laundry trays. Do you think that they are the best that could be used for the purpose?—E. H. J.

Wooden laundry trays will eventually water soak and become more or less unsanitary. It is almost impossible to keep them from giving forth an unpleasant odor after they have been used a while. We should say that any material that, through the action of water or work, is apt to become rough, is not favorable for laundry trays.—D. C. H.

## SYSTEM WORKS TOO HARD.

Editor Plumber and Steamfitter.—I put in an air pressure waterworks and they don't seem to hold the pressure.

while the pump works so hard after pumping a little bit that it is almost impossible to run it by hand. Can you tell me what is the matter?—M. L. F.

From your description it appears to us that you have neglected to place a check valve between the pump and the tank. A check valve so placed would greatly relieve the pump and at the same time hold the pressure in the tank.—D. C. H.

## BOILS WATER IN RANGE BOILER.

Editor Plumber and Steamfitter.—Is there any simple way in which the sediment which frequently settles in the bottom of the range boiler and discolors the water can be prevented from so doing?—J. J. C.

If you will examine the cold water tube on the inside of the range boiler you will probably find that it extends down to within a few inches of the boiler's bottom. Now, when the cold water enters it shoots directly downward and into the sediment with force enough to stir it up so it discolors the water. Lacking any apparatus to cleanse the water or collect the sediment the following means may be used. Remove the cold water tube, cutting it somewhat shorter and capping the end; now punch the tube (for a space of eight or ten inches from the delivery end) full of holes. This will throw the water against the sides of the range boiler instead of the bottom. The cold water tube should be just long enough so that its end would be about two inches above the level of the waterfront. In case of siphonage, then, the waterfront could never be drained.—D. C. H.

## STEAMING POINT OF BOILERS.

Editor Plumber and Steamfitter.—Having moved to the far west quite recently I desire to ask you a question with regard to the steaming powers of boilers, thinking that, perhaps, you can solve the puzzle. I notice that the boilers in this section seem to make steam far more freely and easily than in the eastern part of the country where I came from. Can you tell me why?

Fitter.

We believe that you will find the solution to your puzzle in the fact that

water, at different elevations above the sea level boils at different temperatures. At the level of the sea water would boil at 212 degrees, while in the mountains it might boil at any temperature from 208 to 180 degrees, according to the elevation of the city. Hence in mountain towns and cities we expect to find the steam coming with a less number of degrees of heat shown as there is less atmosphere to be resisted, less heat required and so the boiling takes place at a lower temperature.—D. C. H.

## HOW TO CUT THE STEAM GLASS.

Editor Plumber and Steamfitter.—Will you tell me the easiest and quickest way to cut the gauge tube in case you are out on a job and do not have a cutter with you that may be used for this purpose?

Fitter.

Select the place where the cut is to be made in the tube. Take a three-cornered file and file medium hard for several times around the glass tube. Then grasp the tube with the thumbs just outside the filed line and attempt to bend the tube which should break at the filed point.—D. C. H.

## STAINED CLOSET BOWL.

Editor Plumber and Steamfitter.—What will remove the stains from a closet bowl?—G. R.

It is said that these stains may be removed by using on the bowl muriatic acid which has been greatly weakened by water. It should be used on the bowl by means of a swab and after the operation is over the bowl must be thoroughly washed.—D. C. H.

## PACKING A RADIATOR VALVE.

Editor Plumber and Steamfitter.—Many times the steam radiator valve I have packed soon began to leak. Is it in the material or the manner?

Apprentice.

Perhaps both. The valve should be tightly packed and then after it appears all tight, opened again and it will be found that more packing can be added. This second packing will be found to be effectual. We prefer the asbestos wicking for this purpose and it should be slightly wet with lard oil.—D. C. H.



### WATER GOES OUT OF WATER GLASS.

Editor Plumber and Steamfitter.—A steam boiler on a job that I recently put in will not show water in the water glass when half a pound of steam is raised in the job. As the owner is kicking and I want to get it fixed right, it will be a great favor if you can suggest a remedy.

Peter Gray.

We will give several reasons why the water might disappear. The steam valves of some of the radiators might be nearly (but not entirely) closed. In such a case quite an amount of water would be taken from the boiler. The water might still be in the boiler and working right and yet, through the improper connection of the water column, the water would be driven out of the glass. In case the pipe from the bottom of the water column is connected into the bottom of the fire pot, while the pipe from the water column's top is connected into the top of the steam dome, we should look for an empty water glass with any amount of pressure raised on boiler.

The boiler, again, may be such a rapid steamer that it will raise the water into the mains, more especially if the cellar be shv on "head room." In such a case make use of what is called an "equalizer" and you'll find that you have solved the difficulty.—D. C. H.

### THE PER CENT. OF POWER.

Editor Plumber and Steamfitter.—Will you kindly tell me the per cent. power compressed air gives, as compared with the power used in compressing it? Anxious.

We find it stated that the percentage so resulting is given as about forty per cent.—D. C. H.

### A CEMENT FOR LEAKS.

Editor Plumber and Steamfitter.—Will you kindly tell me of some quickly and easily prepared cement that I can use on steam or hot water leaks or laundry tubs?—J. E. S.

A cement that is made of glycerine and litharge will be found to work well in the cases mentioned by the correspondent. Care will have to be taken to apply the cement rapidly as it sets rather rapidly.—D. C. H.

### CARE OF FILES.

Editor Plumber and Steamfitter.—I buy lots of files for my men, yet the files soon become practically useless. What can you suggest as a remedy? Owner.

See to it that there is a separate till in the tool box for the files. If the files

fill up rapidly or get greasy it would be well to rub the file thoroughly with whiting or chalk.—D. C. H.

### INFORMATION ON RETURN SYSTEM.

Editor Plumber and Steamfitter.—Would you take the pains to give me a general idea of how the return water, or perhaps I should say, how the condensation is taken care of where several buildings are heated by steam from one boiler room and the buildings are somewhat separated and some ways off from the boiler room?

"General Idea."

In general some manner of a pump return is made use of, or perhaps a combination of pump and steam traps.

The condensation from each building can be trapped into a main return line which can be carried back to a tank in the boiler room, from which it may be either trapped or pumped back again into the boilers.—D. C. H.

### QUICKER HOT WATER CONNECTING.

Editor Plumber and Steamfitter.—In your journal issue of February 1st, in the questions and answers under heading of heating water in boiler, I would like to know your reason for connecting hot water flow from store to side and top of range boiler.

Fort William, Ont.

J. A. W.

The connection made between the water front and the range boiler after the manner described above is termed a quick heating connection, as by its use the hot water is drawn more directly from the water front and, at the time water is not being drawn, it allows the storage of hot water in the range boiler, the same as in the general manner of making this connection.—D. C. H.

### DETECTING FLAWS IN PIPES AND CASTINGS.

Editor Plumber and Steamfitter.—What is the cause of a flaw in a piece of pipe or a casting, and how can it be found out? Is there any way in which the flaw can be repaired without removing the pipe or fitting?

"36."

A flaw in a piece of pipe or a fitting is made where the iron has not flowed together, and can be quite readily found out by hammering the fitting or the pipe with an ordinarily heavy hammer. In case the pipe or fitting is cracked or "flawed," the sound given forth will not be clear and ringing, but rather dull or harsh. A deadened sound would be quite descriptive. As concerns the repairing of split fittings or pipes each fitting or pipe will be governed by its own case, depending upon the extent of

the crack or flaw, the manner in which it could be banded and the amount of work necessary to be done in substituting a sound pipe or fitting, as compared with the amount of work having to be done to repair the damaged article. The element of safety also enters into the consideration of the matter. Will the repaired pipe or fitting stand up to its work after it is repaired? If not, what is the use of spending time and money in making experimental repairs?

### "SAND HOLES" IN FITTINGS.

Editor Plumber and Steamfitter,—What is it that causes sand holes in fittings, and how can they be fixed most securely, if it is not desirable to remove the fitting after the sand holes have shown up by testing?

Thos. Nolan.

The sand holes are made by sand which gets loose from the mold when the casting is being made. The sand thereby preventing the metal's making a complete union, and when the test is applied the sand blows out, leaving a small hole. If there are two or three sand holes, only, in a fitting, they can be quite easily caulked by using either lead or tin foil. Should the fitting be porous, the safer way would be to remove it at once, and in its place use a fitting that has been tested.

### SEWER PIPE IN CELLAR.

Editor Plumber and Steamfitter,—In running the sewer pipe in the cellar, would it be right to run it supported strongly from the cellar joists? Or would it be better to run it under the cellar bottom which may be afterwards cemented over? A. F. G.

If the pipe is to be run and supported from the joists, extra care will be necessary to so secure it that there is no chance for it to sag or vary. We do not see just why it should be hung in the air anyway. If so installed and there is a large amount of cold water passing through it, in the summer time there will be one "sweaty" pipe as a nuisance. It will, again, more easily give forth the noise of running water as the closets are discharged and various other fixtures also in the building. The pipe, thus put in, is unsightly, is in the way and we fail to see any real practical reason for thus running the pipe.

If proper pains be taken in laying the sewer pipe that is to go under the cement cellar bottom, whether it be iron pipe or earthenware, we believe that the general results will be found more satisfactory in most cases than in the other manner of installing, and if we are wrong, we will stand it to be "shown." Not in special cases, remember, but on the average.—D. C. H.



# Taking Steps for Coming Conventions

Ontario Officers Will Have Important Reports to Submit to the Good Friday Convention at Toronto—Calgary Committees are Busily at Work.

TORONTO, Feb. 28.—The officers of the Ontario Society of Domestic Sanitary and Heating Engineers have been busy the past few months carrying out the extension programme of work which devolved upon them after the last convention of the society on Thanksgiving Day. They are now getting matters into splendid shape and will have important developments to report when the society meets again on Good Friday.

First and foremost is the decision to make membership in the society subsidiary of an examination. This matter was decided at the Thanksgiving meeting and it was left to a committee. The examination forms have now been practically completed and will be ready to present to the Good Friday convention for ratification. If the society approves, the examination system will take effect immediately after the meeting.

The way in which the system will probably be conducted is as follows. A central examining board will be appointed to consider all applications. Each applicant will be referred to a man in that district who will be appointed to look after the examinations in that section. The papers and tests will be submitted to the applicants by the district judges.

It is felt that the barring from membership of all who cannot come up to the standard set by the examining board will be one of the most important steps yet taken for the uplifting of the trade.

## To Consider Amendments.

An important matter to come up before the Good Friday Convention will be the amendments to the national constitution, which the officers of the Canadian

Society of Sanitary and Heating Engineers have drafted. As the relative status of the national and principal bodies will be involved, the matter will doubtless come in for considerable discussion. The provincial officers will have a number of recommendations to make.

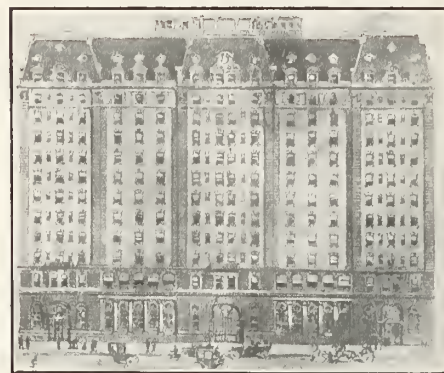
## Certificates Ready.

In accordance with the decision of the last Ontario convention, the directors have prepared a printed certificate form which will be issued to all members in good standing. These certificates will be ready for distribution by Good Friday. The idea is that members should have their certificates framed and hung in their offices or showrooms.

## To Secure Attendance.

The Ontario officers are making a determined effort to get members in all parts of the province sufficiently enthused to attend the Good Friday convention. Secretary Frankland sent out a circular letter some weeks ago, enclosing application blanks and extending a hearty invitation to be present at the convention. The response has not been as large as had been hoped for, but a number have returned the blanks with their membership fees. All others who received this letter should fill out their application and send it in. Likewise, they should arrange now to get down to Toronto for the convention. It is not too early to decide the matter. It will become too late if the matter is allowed to slide.

It is highly important that both a large and representative attendance



The new \$1,000,000 C.P.R. Hotel at Calgary.

should be on hand for the convention. The business to be transacted is of vital importance. The trade is entering, as it were, on a new era. The aims of the Ontario Society, if accomplished, will sweep many of the evils now besetting the trade out of existence. To further the good work begun, it is necessary to secure the united support and backing of the trade, however. That a passive approval of the measures taken is accorded by all master plumbers seems reasonable to assume. What the society needs is active support, and the first sign of activity should be attendance at the Good Friday convention.

It may be pointed out that delegates could arrive in Toronto on Thursday, attend the convention on Friday and devote Saturday to the transaction of personal business. This would enable them to kill two birds with one stone and still take advantage of the holiday rates.

See also page 15.



A view of the Main Street of Calgary, Where the National Convention will be held.



# Reasons for Changing the Trade Name

"We have been advising and planning too long without proper recognition. . . . The knowledge requisite to do this covers expansion and contraction, tensile strength of different metals and how to provide for same, ventilation, syphonic action, designing. If that is not engineering knowledge what is?" writes J. E. Farrell in answer to Thomas Watson.

Editor Plumber and Steamfitter:—

I have read Thomas Watson's article on registration of plumbers which was interesting, and I trust will arouse a few at least of the many capable domestic sanitary and heating engineers throughout the country, who may have time at their disposal to delve into the history of the trade in the past, and who are in position to advance arguments from a more technical point of view than myself.

Now Mr. Watson's argument on behalf of the term "plumber" is based more on the past than that which actually obtains to-day in the trade. His reference to the worshipful company of plumbers, London, as a guidance which dates back to A.D. 1365 might be quite correct had the science of sanitation, methods of design and construction not alone of sanitary heating systems but of general building remained stationary. Aside from that fact mankind as a whole has advanced its standard of living. Also the cities have become more congested, forcing the skyscraper, huge hotels, apartments and school buildings into existence. Railway station, mill and factory have developed in a corresponding manner, each of which calls for its peculiar design and construction in sanitary and heating work, which was not dreamed of in the old purely handiwork stage of plumbing and heating. The necessity for engineering knowledge then did not exist. As a consequence mechanical, structural, electrical, heating and ventilating engineers are acknowledged factors in present day building, why not domestic sanitary engineers?

While it is true a branch of civil engineering has been called into existence, their work only covers the laying of sewer systems and the disposal and treatment of sewage. Notwithstanding, Mr. Watson contends that they have problems of a greater complexity to deal with and which plumbers would not attempt. Well, the average plumber knows as much as most of the sanitary engineers do about sewage disposal. We have been advising and planning, etc., too long without proper recognition or pay for same. Besides, the knowledge requisite to do this covers expansion and contraction, tensile strength of different metals, and how to provide for same, ventilation, syphonic action, designing.



J. E. Farrell.

If that is not engineering knowledge what is?

Mr. Watson states no person would dispute the importance of this knowledge which is necessary to advise, plan, arrange and execute the installation of sanitary work.

As to due consideration, the proposition to change the name came up in three or more conventions and with a full knowledge of what the term implied.

In further reference to the worshipful company of London and antiquity, the term worshipful is meaningless and absurd. As to antiquity, while that may count in some things, it is modernism, up-to-dateness only that count with sanitary or heating work.

As to registration, under the new regime it seems to me it must be taken care of by each province; first, the journeymen aiding the masters in securing legislation to that end. It seems to me there should be certificates of different degrees which would call into existence a board of examination and registration for domestic sanitary engineers. This board should be composed of practical men in the business, also journeymen and a medical doctor, and there should be certificates of different degrees which might be accepted for registration in any other province.

As properly trained, educated and qualified members of the Domestic, Sanitary and Heating Engineers' Society, aside from its material aspects, we are engaged in one of the most important fields of human endeavor. Society everywhere is awakening to the fact that health is a factor prerequisite to the welfare and happiness of a nation. We can play a large part in attaining this for Canada and Canadians, incidentally gaining for ourselves a recognized standing impossible under the old and obsolete term of plumber.

J. E. Farrell.

North Bay, Feb. 12.

## ARRANGEMENTS AT CALGARY.

Calgary, February 26.—Arrangements for the National Convention are being vigorously pushed, despite the fact that it is still quite a few months away. It is felt that only by early and continuous effort will it be possible to get as many here as the importance of the convention warrants. The campaign will be kept up, therefore, unremittingly and it is believed that it will result in the biggest convention on record.

Manufacturers in all parts of the country are showing an interest and it seems assured that the exhibition will be one of unusual size. The intention of the Calgary Association is to make it a feature of the convention.

The social side of the big week will contain many interesting features. It is not possible yet to state what some of the events will be but visitors can rest assured that the Calgary members will "do themselves proud."

## PRESSURE AT WHICH PIPES ARE TESTED.

Editor Plumber and Steamfitter,—How much pressure are the pipes used in our business tested at?

"Helper."

"Helper" does not state which particular kind of pipe, but we assume the lap or the butt welded pipe is what he has reference to. The butt welded pipe is tested to a pressure of three hundred pounds per square inch, while the lap welded pipe undergoes a test of some five hundred pounds per square inch.



# Methods of Sewage Disposal

No. 3.

By Charles W Chandler, Toronto.

Various forms of septic tanks have been in operation for some considerable time but in recent years important improvements have been made over the original form, more especially in connection with the arrangement of the tank itself, rather than in the syphoning or automatic discharging apparatus. As already pointed out, the tanks must be absolutely watertight and impervious to moisture, which necessitates the use of either brick or concrete, coated inside with cement.

Fig. 1 shows a small covered septic tank which is divided by wall, A, into two compartments, namely, the septic or sewage tank proper, and B, and dosing chamber C, sometimes called a dosing chamber. The sewage enters the septic tank through inlet, D, which is turned down and submerged as shown, so that the surface scum is in no way disturbed. From the septic tank the effluent overflows into the dosing chamber through inlet, J, which is also submerged below the scum.

The dosing tank, C, can be omitted from a septic tank when the effluent is discharged into a stream; when, however, the effluent is subsequently treated by filtration, as effluents invariably should be, the dosing chamber should be so proportioned to the subsurface under drains that one dose will properly flood the whole system. The syphon apparatus, as shown in Fig. 1, is a Miller Automatic

the syphon and overflowing into the trap which it seals, thus confining the air in space, F, which forms the long leg of the syphon. As the effluent then rises in the

septic tank, which, while the principle is the same, differs from the tank previously described in two of its details.

The septic tank proper is in itself di-

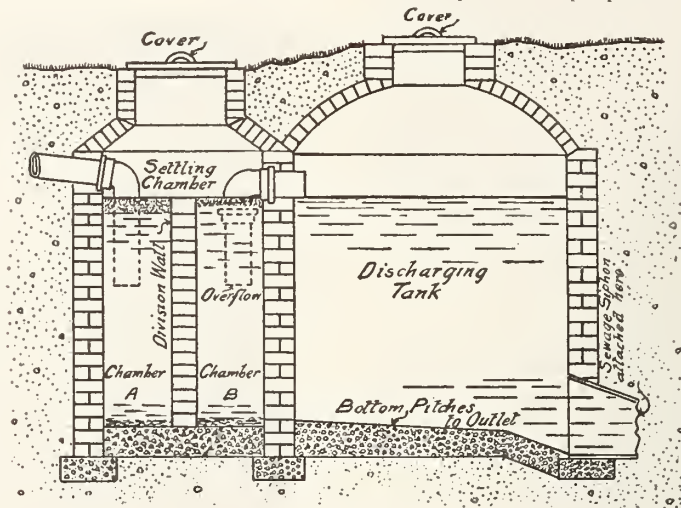


Figure 2.

dosing chamber, it compresses the confined air in the long leg, forcing the water down on the one side and up on the other as shown, until the compressed air in F is about to escape under the bend that forms the dip of the trap. The additional inflow of the liquid then compresses the water so that the confined air can escape from the trap carrying with it some of the water; as the air escapes from, F, the space fills with water from the dosing chamber, thus filling the long

vided by a partition wall, the sewage entering the chamber, A, passing into the chamber, B, and thence overflowing into the discharging chamber. Trouble is sometimes found with the single settling chamber, in that the entrance of sewage stirred the contents to such an extent that much solid matter found its way into the discharging chamber. This trouble has been obviated by using a settling chamber divided into two separate compartments, thus enabling the overflow to deliver to the discharging tank liquid only, thereby preventing the solid substances from clogging the syphoning apparatus.

The other difference being in the syphon, which is of the Rhoads-Williams type, as shown in detail in Fig. 3. The action of this syphon depends upon the sudden releasing of compressed air confined in the long leg of the trap between the water in the discharging tank, and the water in the deep seal trap. As the contents of the tank rise, the pressure increases, finally becoming strong enough to force the water out of the blow-off trap. This releases the air pressure, and a heavy flow from the tank into the syphon at once takes place, which quickly starts the syphon into full operation. The action of the syphon is stopped by the admission of air through the air pipe, air entering the pipe from the outlet pipe as soon as the flush of waste from the tank decreases sufficiently to expose the lower end of the air pipe. The opening from the tank to the syphon is enlarged

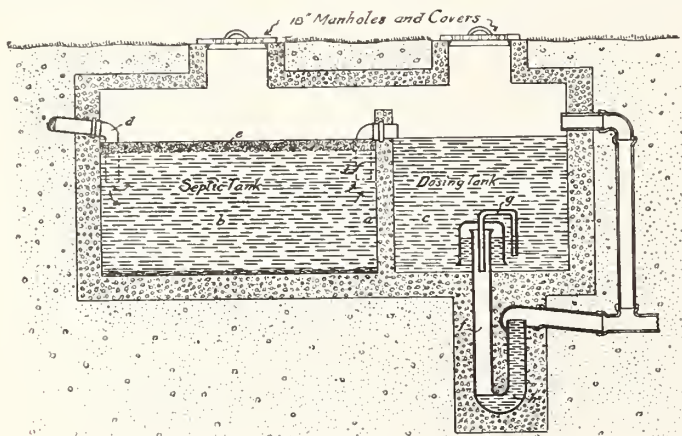


Figure 1.

Syphon and is operated as follows: The sewage overflows into the dosing chamber through pipe, J, rising in the bell of

In the two previous articles by Mr. Chas. W. Chandler through a typographical error the term "Aerobic" was spelled aerotic.

leg of the syphon, which immediately comes into action and empties the contents from the dosing chamber. When the effluent in the dosing chamber is lowered to the level of the mouth of the air pipe, G, the syphonage is broken, by the admission of air through the pipe.

In Fig. 2 is shown another form of

in order to insure the quick-filling of the apparatus.

Fig. 4 is another and very extensively used septic tank, especially adapted for isolated household dwellings, and placed close to the wall of the building, where, in fact, the large majority of this style of tank now in use are located. This tank is divided into two compartments. The sewage enters the first compartment through soil pipe E, which is directly connected with the closet, bath, sink, etc., and extends to a point two or three feet above the roof of building, the said pipe not only acting as a conductor of sewage to the tank, but also as a channel by which any gases in excess of those in solution may pass out to the atmosphere at a height which renders it impossible for them to inconvenience the occupants of the building. The overflow pipe F is built into the dividing wall, the mouth or entrance being within seven or eight inches of the bottom of the tank, and being covered with a wire screen about the size of an ordinary pail. The inlet T in the second compartment admits fresh air, which passes freely over the centre partition—spaces being left in the top of the latter for the purpose—and up through the soil pipe to the roof. A connection from this may also be made with the outlet pipe to act as an overflow in case of any emergency. In the centre of the second compartment is placed a Quinn automatic valve C, which is caulked into a four-inch cast iron bend and which is securely built into the bottom of the tank during its construction. The top of the hub of the bend should be

matter is retained until it is reduced by bacterial action as previously explained. The effluent is allowed to enter the second compartment or dosing chamber

and most direct route, regardless of the turn on the steam main. Some would argue that, if the branch be taken off before making the turn, that the amount of

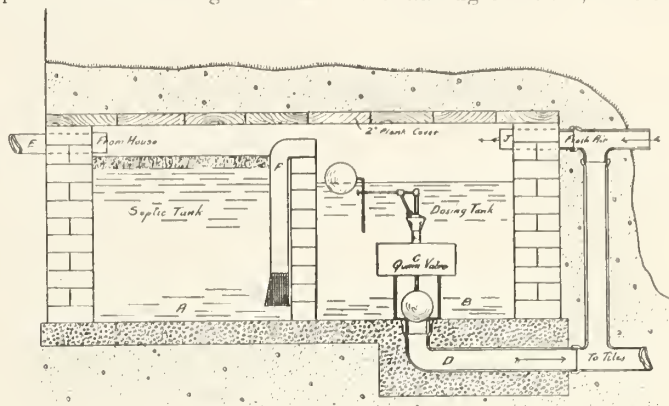


Figure 4.

through overflow F, which is turned down as shown because of the presence of the bulk of the organic matter in suspension or near the surface. When the liquid has risen in the second compartment to the height at which the unlocking float on the valve has been set, the valve automatically opens and discharges the contents of that compartment into a system of sub-surface drainage through which it percolates into the surrounding earth, to be taken care of by nature as already described.

#### LOCATION OF BRANCH.

Editor Plumber and Steamfitter.—If a branch from steam main to the radiator comes anywhere near a right angle

condensation thrown against the "ell" would be detrimental, but if the piping is rightly proportioned, we do not believe that any bad results would follow. In this, or other low pressure steam work, it should be the object of the fitter to get the steam into the radiators with the shortest amount of travel between the radiators and boiler, governed, of course, by the space, obstructions and considerations which arise from certain allowances for expansion. Do not make the job so rigid that every time the plant is heated up, the supply end of the radiator will be lifted until the radiator legs are half an inch or more clear from the floor. Such practices show inefficiency in the planning and oversight on the part of the foreman.—D.C.H.

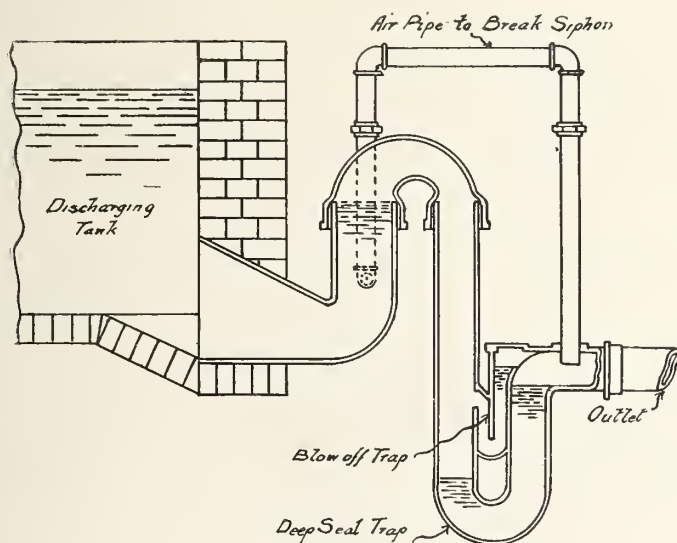


Figure 3.

slightly lower than the level of the floor of the tank.

Briefly the operation of the system is as follows. The sewage from the building enters through soil pipe E filling the first compartment in which all the solid

turn on said main, is it better to take off the branch before or after making the turn on the steam main?—Fitter.

In ordinary instances and in the case of a steam job we should say to get steam to the radiator by the shortest

Russell Chown, of Belleville, visited the sanctum of Plumber and Steamfitter recently. He was in Toronto to attend a meeting of the executive of the Ontario Retail Hardware and Stove Dealers' Association, of which body he has the honor to be president. The editor would like to have had a few of the "doubting Thomases" of the sanitary trade lined up for the enthusiastic "R. C." to harangue. Any man who doubts the benefits of belonging to a trade association had better keep away from Mr. Chown if he desires to remain unconvinced. Mr. Chown is a firm believer in co-operation, and he is full of the subject. He is in the plumbing business as well as hardware and appreciates fully the need for a strong association among sanitary workers.

#### To Start in Welland.

Welland, Ont.—A. D. Cross will erect a two-storey business block here and will go into plumbing, heating and sheet metal work.



# Complete Course in Sheet Metal Work

By L. W. KOSER---Number 2

On plates 1 and 2 we show all the practical geometry that is necessary for the sheet metal worker to know.

The student should carefully draw these forms until he is familiar with them.

For drawing the Pentagon, Hexagon and Octagon the simplest way is to draw a circle and step it off into the desired number of sides. For instance, if it is desired to draw a Pentagon or five-sided figure, first draw a circle the size of the figure wanted, and with the dividers step it off into five equal spaces, and draw straight lines connecting the different points.

Some, however, may prefer the technical method for drawing these figures, and for their benefit we give the following propositions in Euclid:

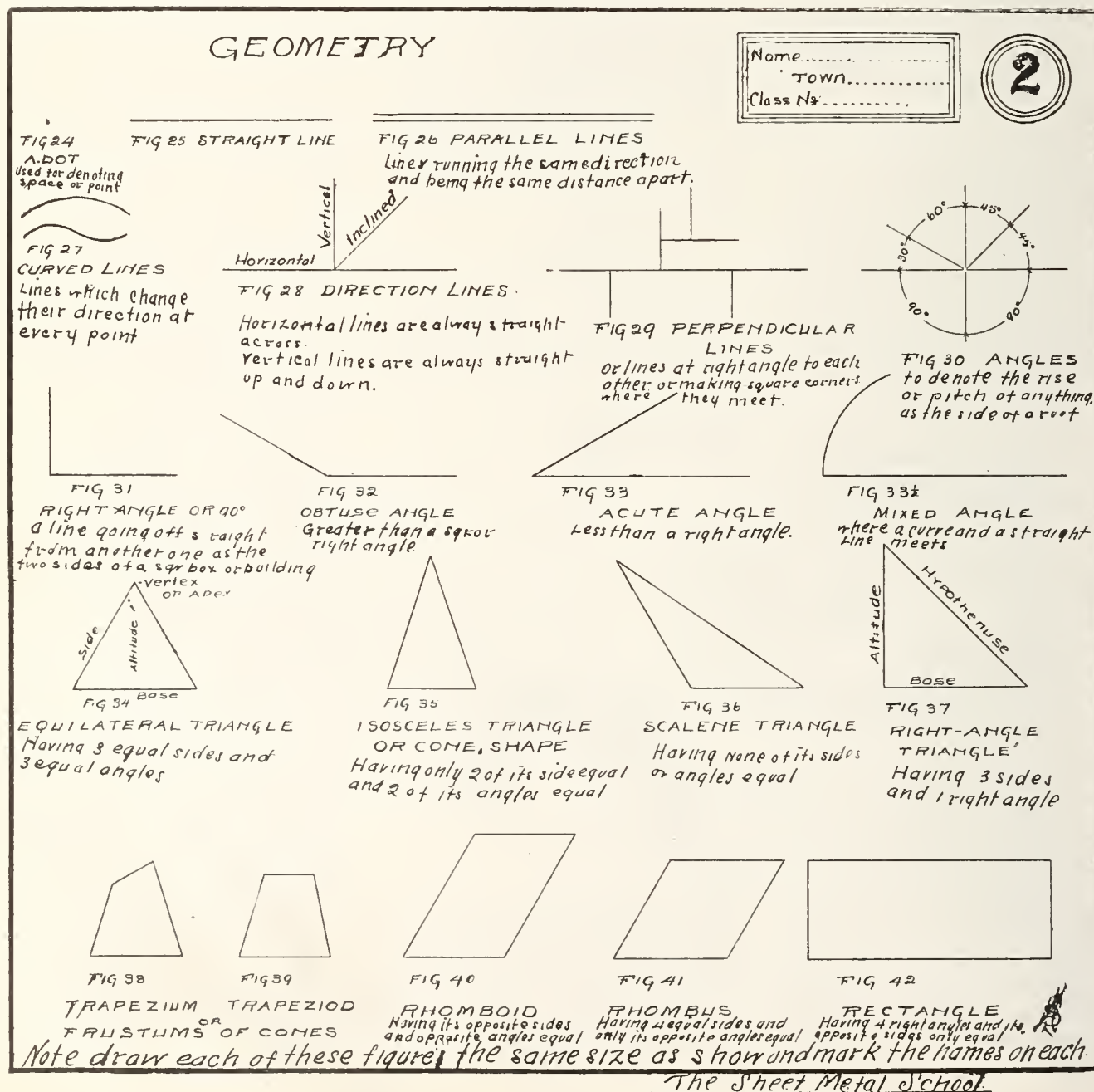
To describe or draw a Pentagon.—Draw a circle the size of the desired figure; next draw a straight line through the circle as A B, and another straight line at right angles as C O; bisect the space A O. (The rule for bisecting is explained by Fig. 55). With the point of the compass set at R and the lead at C, describe the arc C G; then with the point at C and the lead at G, describe the arc at G F. Connect C F with a straight line, which will be one side of the Pentagon. Set the dividers to this space, and step off the other four sides.

To describe a Heptagon.—Draw a circle; set the point of the compass at any point on the circumference as A, and with a radius equal to the radius of the circle as A B, describe the arc C G; connect C G with a straight line, also

A B, and where they intersect mark the point O; with the point of the compass at G, and with a radius equal to G O, describe the arc O R, connect R G, which will be one side of the Heptagon.

To describe an Octagon.—First draw a square the size of the Octagon wanted; set the point of the compass at any corner, as A, and with a radius equal to half the diagonal or centre of the square, describe the arc C G; repeat this operation at each of the four corners, connecting the ends of arcs will give the Octagon.

To describe an Ellipse. (This should be drawn fairly large).—First draw a straight line the length of the required Ellipse, as A E, and at right angles and through the centre of this line draw another line C D, which represents the



width, mark the intersection O, set the point of the compass at C, and with a radius equal to B O, describe the arc N M; set a pin firmly at N M and C; wrap a string around these points with a loop or knot at C; remove the pin C and insert the point of the lead pencil. Keep the string tight and begin moving the pencil around; the result will be an Ellipse, which will be sufficiently accurate for sheet metal work.

To bisect or divide any space in half, or to find the centre of any space.—Let A B be the space it is desired to bisect. Set the point of the compass at A, and with a radius greater than one-half of A B, describe the arc C C. With the same radius and the point at B, describe the arc N M. A line drawn through the points of intersection bisects the space A B.

To erect a perpendicular to a straight line.—Let A B be the given straight line, and C the point at which it is desired to erect a perpendicular or line at right angles. With any radius and the point of the compass at C, describe the arc D E, and with same radius and the point at D, describe an arc cutting D E at F. With the same radius cut D E at G. Bisect F G as explained for fig. 55, then a line drawn from C to the point of intersection will be the perpendicular.

To construct a triangle from three given lines. (This example used in triangulation).—Draw the line A B equal to the line No. 1. Set the point of the compass at B, and with a radius equal to the line 2, describe an arc. Set the point at A, and with a radius equal to

the line 3, describe an arc cutting the first arc at the point C, connect A B C.

To bisect a triangle. (That is, to divide into three equal parts).—Let A B C be the given triangle, set the point of the compass at B, and with any radius describe the arc 1 2. Bisect the space 1 2 and draw a line from B to the point of intersection thus bisecting the triangle.

To trisect a right angle. (That is, to divide into three equal parts).—Let A B C be the given right angle. With the point of the compass at B and any radius describe the arc D C. With the same radius and the point at C, cut the arc at 1, and with the same radius and the point D, cut the arc at 2. Lines drawn from 1 to B and from 2 to B trisect the right angle.

## GEOMETRY CONT'D.

Name \_\_\_\_\_  
Town \_\_\_\_\_  
Class No. \_\_\_\_\_

3

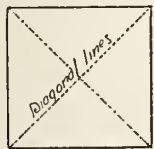


FIG 43  
SQUARE  
(4 SIDES)

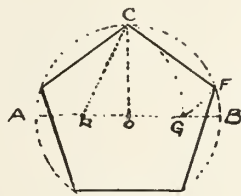


FIG 44  
PENTAGON  
5 SIDED

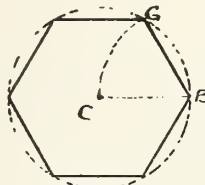


FIG 45  
HEXAGON  
6 SIDED

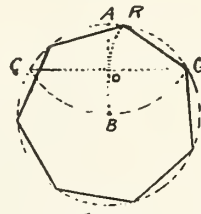


FIG 46  
HEPTAGON  
7 SIDED

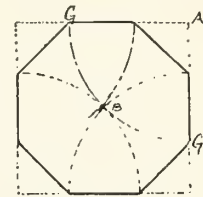


FIG 47  
OCTAGON  
8 SIDED

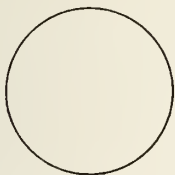


FIG 48  
CIRCLE

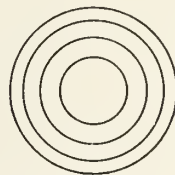


FIG 49  
CONCENTRIC  
CIRCLES

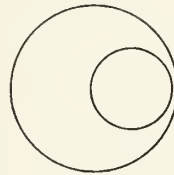


FIG 50  
ECCENTRIC  
CIRCLES

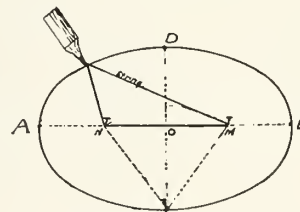


FIG 51  
ELLIPSE  
Make A-B 6" long  
and C-D 4" "



FIG 52  
SEMI-CIRCLE

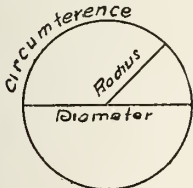


FIG 53  
PARTS OF A CIRCLE

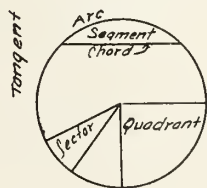


FIG 54

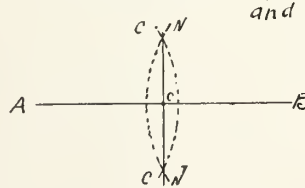


FIG 55  
TO BISECT ANY SPACE

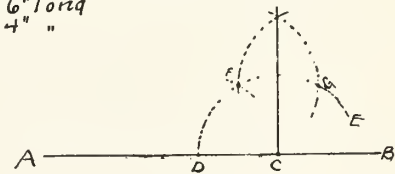


FIG 56  
TO ERECT A PERPENDICULAR  
OR LINE AT RIGHT ANGLES.

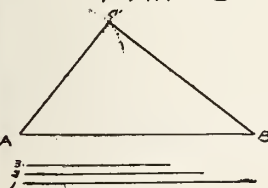


FIG 57  
To construct a TRIANGLE  
With 3 given lines

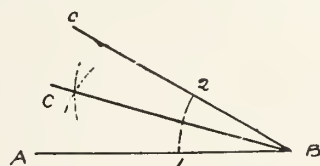


FIG 58  
To Bisect a TRIANGLE

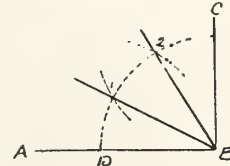


FIG 59  
To Trisect a Right-angle

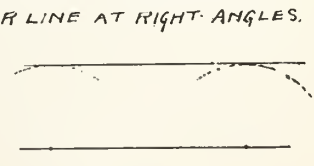
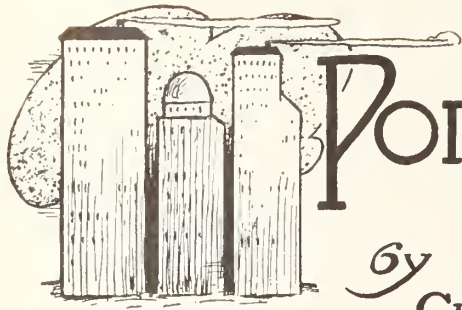


FIG 60  
To draw a  
parallel line





# POINTS ON HEATING

By  
CHAS. H. DENISON



## Chapter 25. Designing a Small Heating Job.

One reason why so many steam jobs turn out unsatisfactory and also at a loss to the contractor is that he has no clear idea of just what he must do. He has no picture in his mind's eye of how the job will look when done.

He may have a general idea, but it is not specific. There are anywhere from a dozen to fifty minor points which, if neglected, will materially, if not completely, do away with the profits of the job.

Before submitting the estimate a careful and accurate design should be made of the entire system. The tendency is to slight these matters in a small job, while every attention is paid to such consideration in larger contracts. Now, I have heard many a good business heating man remark that there was more money in the smaller contracts, if rightly attended to, and so it appears to me that these smaller contracts are deserving of much more consideration than they sometimes receive.

Perhaps it is an old house and the plans cannot be obtained. May be it was built by some jackknife carpenter and there never were any regular plans at all.

In such a case it will take perhaps an hour and a half to measure up the rooms and draw out a rough (but accurate) pencil sketch. You will then have the basis from which the steam job can be accurately estimated. Many contractors will "lump" a bid on a small job. Such a proceeding is as unfair to your customer as it is to yourself and is dead sure to result in unpleasant complications later in the game.

With this plan it is easy to go around the house and in connection with the owner so locate the position of the radiators that there will never be any dispute afterwards. I mention this point because it is one that is quite often omitted and it always gets the fitter in bad when he places the radiators where they are not wanted.

The estimating steam heating contractor now has in his possession the complete data, together with the data in the office, with which to design an easy working, satisfactory steam job

and if he does not do it the fault is entirely his own.

Locate the boiler on the plan and then lay out the pipe lines, the mains, branches, risers and the returns, or return. This can be very easily done and to a scale besides, so that the exact amount of pipe can be determined and the number of fittings ascertained. While all this may sound like "small potatoes" to many contractors, it is an easy matter to "guess away" from ten to twenty dollars on a steam job.

Suppose you "guess" wrong on ten jobs a year. Do you begin to appreciate where some of the profits have "hiked" to?

This is a home-made plan and with lead pencil, too, if haste is desirable (or you don't possess the faculty of drawing unblotted lines with pen and ink), but all the same pipe sizes can be marked on the plan, and a note can be made as to the proper "pitch" of the pipes.

The location and general run of the job having been decided upon, the rooms can be figured as to the amount of radiation necessary to heat them to whatever degree of heat may be specified in the contract.

From the size of the radiators, valve sizes and the number necessary can be obtained. Also the air valves and from the amount of radiation to be furnished the sizes of the mains can be ascertained and the contractor may also then determine just what size of boiler he will require to run the job satisfactorily and safely.

The job is far from being completely figured as yet. There is the pipe covering. This can be determined at the same time the mains and branches are measured. The covering for the boiler and fittings, the bronzing, the freight and cartage and last, but not by any means least, the fitter and helpers' labor necessary to instal the job. The amount of time necessary to do the job is not so hard to determine even if you have never yourself handled the tools, but will the fitter to whom you entrust the job do it in the time that you estimate?

It's a gamble, but if you are paying him decent wages and have treated him as a man should be treated, the chances

are that he'll do his best to accomplish the same. He may even surprise you and gain, instead of losing, a day's time, although such instances are not numerous.

There is yet another point to be considered and that is the manner in which the material is got to the job. To be shy either the boiler or the radiators is a great inconvenience and to be avoided if it is possible so to do.

Sometimes this can be accomplished by ordering the goods ahead of time or carrying enough stock on hand to meet the urgent demands.

If possible the boiler, pipe, valves, fittings, radiators, etc., should be assembled on the job at the same time. It is not absolutely necessary, but it is much more convenient.

Now, all of the foregoing (after the contractor has measured up the house) can be designed at the contractor's desk. He can see the job being constructed. He can see the radiators and boiler in place; all this in his mind's eye of course, and seeing these things and knowing from the figuring he has done in getting out his design of the job, he can come pretty near giving to the owner an accurate account of just how, barring accidents, the job is going to perform after it is installed. There need be small hesitation in guaranteeing a steam heating job that is designed something after the fashion of the manner which I have endeavored briefly to describe to the readers of this paper. The "haphazard, guessing, lumping" contractor can never attain to the perfection in his jobs that is obtained through heating jobs which are carefully designed and one of the things which has done more to give steam and hot water heating so many black eyes, so to speak, is the number of small heating jobs that have been just slapped together any old way, so that they were hooked up in a manner that they would hold steam.

A small job is worthy of as much attention, in direct proportion, as is the heating job in the biggest skyscraper in the country. Therefore, give better attention to the small heating jobs and you will find that it will pay you a mighty good profit and one which you have not appreciated up to this point.

# Some Practical Methods of Ventilation

An Address by A. E. Freeman Before the Toronto Association of Domestic Sanitary and Heating Engineers—The Need for Ventilation Presented Strongly—The Best Methods to Pursue.

TORONTO, Feb. 16.—At the monthly business dinner of the Toronto Association of Sanitary and Heating Engineers last night a practical address of considerable interest was delivered by Arthur E. Freeman, consulting engineer, on the subject of ventilation.

Mr. Freeman just touched on the necessity for pure air, arguing from a health standpoint, and giving some striking figures. He showed that ventilation is particularly necessary in modern buildings, which are considerably more airtight than those of olden times and are warmed by steam or hot water, from which no natural ventilation results.

Taking up the practical question of ventilation, he said:

The most effective method of ventilating a room is to open the windows on the opposite sides and let the wind blow directly through, as the air within is thus actually removed in short order and replaced with a supply of fresh air at once. This method is very inexpensive and acceptable during the warm weather, though I doubt whether many of us would have appreciated its advantages during the past six weeks.

It is impracticable to remove at once all of the vitiated air from a room and the ventilation of a closed apartment reduces itself to a process of continued dilution of the impure air with fresh air introduced in sufficient quantity to maintain a standard grade of purity and the problem is simply to introduce this volume in the most efficient and economical manner without causing perceptible draughts. The methods of reaching this end vary with the conditions.

In the ordinary small hall or school room, where the amount of space within the room is large compared with the number of occupants, the best results are generally obtained by introducing the fresh air from an inside wall at a point above the people's heads and letting it blow toward the wall containing windows. As the air is brought in above the head-line, draughts are avoided, and when it comes in contact with the windows it is cooled and gradually settles toward the floor. The outlets for the impure air, in this case, should be placed near the floor in the same wall, which contains the inlets, thus drawing off below the breathing line the comparatively impure air within the room. There is always a certain amount of leakage of air from a room and, ordinarily, about two-thirds of the volume of air introduced is removed mechanically. Care must be

taken in proportioning the sizes of the outlet registers to prevent draughts and an air movement through the outlets of more than three feet per second is not good practice.

While the above outlined system of ventilation is satisfactory in its proper place, it is not applicable to such buildings as theatres or large halls and churches having galleries. In the latter cases there is sufficient heat given off from the bodies of the people to actually heat up the surrounding air enough to cause it to rise toward the ceiling and, therefore, any downward scheme of ventilation would have to operate in opposition to this natural flow.

Consequently the fresh air is best introduced at the floor and the vitiated air removed at the ceiling and behind the galleries. With this system best results are obtained by admitting the air in small quantities from a large number of registers in the floor and the rate of flow through each register made low enough to prevent draughts. By this method the proper volume of air for the whole auditorium can be admitted without discomfort. Often times especially designed seats are employed for this style of ventilation having hollow legs with registers or grilles in the sides to provide the air supply.

Systems of ventilation are also often desired for purposes of removing steam, odors, gases and excessive heat from rooms. Large kitchens, chemical laboratories and crowded boilers rooms are often fitted up with complete ventilating outfits and, in some cases, such as the boiler rooms on shipboard, it would be impossible to remain within without proper ventilation.

In these cases the ventilation is usually accomplished on the exhaust principle, that is to draw off the air at the most advantageous points and to trust to the inleakage from surrounding rooms and halls for the replacing of the air expelled. This method, when applied to such rooms as laboratories, kitchens and toilet rooms has the advantage that there is no tendency for the air within the room leaking out into the adjoining apartments, where odors might be objectionable.

The most positive and only really reliable method of introducing fresh air is by means of a mechanically driven fan or blower. Reliable data is now available concerning the volumes and pressures given by different sized fans driven at different speeds and the problem is to

pick the fan, which will give the results desired when operating under the least power consumption. Whenever possible direct connected steam engines, or direct current motors should be used to drive the fans as they offer a possible control of the speed of the apparatus to meet varying conditions.

The air to be supplied to a building must be warmed and, as a general proposition, I think that better results are obtained from drawing the air through the heaters than by blowing it through coils placed between the fan and the ducts.

In such cases as require a washing of the air before it is delivered to the building, which is often necessary in smoky or dusty localities the heater is usually divided into a temporing heater, placed in front of the washer and which warms the air to a temperature sufficient to prevent freezing within the washer, and a reheater, which raises washed air to the temperature required in the building.

In such buildings as require an air supply of one temperature in one part and other temperatures in other portions the reheater is placed beyond the fan and the air blown both through and around it. A cold and warm air chamber is then placed beyond the reheater and any required temperature of air in the various supply ducts obtained by a proper mixture of the cold and warm air from these chambers. This mixture can be obtained and maintained more uniformly by an automatic, thermostatic control.

A great many people believe that, if they install a system of fans, etc., to force fresh air into their buildings and provide vent ducts and registers for removing the vitiated air, that the supply fan will force the foul air up these flues. This I believe to be a mistake for the following reasons:

Satisfactory ventilation is accomplished by creating a general movement of the air within the room in such directions that the fresh air supplied comes uniformly in contact with all parts of the room. If the air is not positively drawn off through properly located vents a pressure is created within the room by the fresh air supplied and this pressure tends to force air from the room, not only up the vents, but through every crack and opening around doors and windows and through the walls, thereby greatly reducing the efficiency of the vents provided. The best practice is to install fans for



removing the vitiated air positively through the vents. Apsirating coils are often used in the vents to accomplish this end, although they are not as effective as the fans.

One other point of considerable importance in connection with artificial ventilation is the proper amount of moisture to be contained in the air.

I think that there can be no question but that air, as it is found out of doors, is the most healthy. The condition, which we would like to realize is to fill our buildings with natural air from the country at say 70 degs. F.

If the outdoor temperature were 70 degs. and we forced this air into our buildings our supply would be natural and the relative humidity about 70 per cent., meaning that the air would contain about 70 per cent. as much moisture as it would be possible for it to contain at that temperature. But the amount of moisture air will hold varies with its temperature, consequently if we draw air from outside at say 20 degs. F., which may have a relative humidity of 70 per cent., and then heat it up to 70 or 80 degs. it no longer contains the proper proportion of moisture and we should make up the deficiency.

This is done by either a regulation of the washer, an auxiliary water spray or a steam coil and the amounts given up controlled by an automatic device called the humidostat.

Man was placed on this earth in the open, but he has chosen to confine himself in closed buildings. If he wishes to remain as healthy as possible he should surround himself with air as nearly like the natural air, at a comfortable temperature as is possible to obtain and, so far, the devices and methods mentioned in this paper seem to be the most feasible, economical and successful.

## PLUMBING MARKETS.

Montreal, Feb. 29.—This is rather an aff season with the plumbers. Though there has been a great deal of snow lately the cold has not been intense, and consequently there have not been many emergency calls. But while the repair work has fallen off, many of the plumbers have found plenty to do preparing figures upon contracts which are shortly to be let. Some are already well started, and for these the plumbing contract will soon be given.

Smaller buildings by the score are about to be built. The architects and contractors are anxious to sub-let their heating and plumbing contracts, so the master plumber is having a busy time making estimates upon the figure which he can agree to take for his work.

### Specialties Being Ordered.

Those dealers who handle the specialties are now doing much of their buy-

ing. The spring is coming and in the spring many move into new homes. For these they want special equipment, and the men who meet this demand are preparing for the heavy business which may be expected.

There are no labor difficulties here. All is going along smoothly. The only excitement is the excitement which comes from the rush for business.

Enamelware.—Since winter set in there has not been a tremendous demand for this line, though orders have kept up remarkably well. The comparative quiet was not regretted by the manufacturers. Their reserve supply was depleted by the heavy demand of the fall, so the winter lull enabled the production of a much needed reserve.

### No Diminution of Demand.

Indications are that this reserve will be reduced shortly. From all parts of the country the manufacturers are booking large orders. The west especially is demanding goods. It appears that there as in the east the building operations are to be as extensive as they were in 1911.

Lead Pipe.—Prices here remain at the figures quoted for some time. The changes up and down of the pig have had no effect. It is possible, however, that there may be a different figure quoted after navigation opens.

Ingot copper has advanced rapidly of late. Makers of many lines of copper goods have, as a result, been forced to advance their prices, so those plumbers who handle fixtures made of this metal may expect to pay a higher figure before long. There does not seem any great likelihood of copper dropping in price. That has been predicted from time to time, but the metal has usually responded with another advance.

Soil Pipe.—All winter long the manufacturers have been turning out this pipe. They now have large supplies on hand, but supplies which they do not expect will be at all too large to meet the demand.

### Remembering the Shortage.

Iron Pipe.—Last fall the difficulty which the dealers experienced was to get a supply. Some have remembered this and are already laying their orders. The manufacturers have remembered the fall rush too, and have been working hard turning out a good supply.

Boilers and Radiators.—The immediate demand is over. Dealers are not hurrying to lay in a new supply, and yet they are bearing in mind the fact that they will need a good stock of these lines to enable them to fill contracts for new work. Much of this installation will start quite early in the spring.

Solder.—So much tinsmithing has been going on during the past few weeks that the call for solder has been exceptionally large. There does not seem any likeli-

hood of a slack time either. The supply is equal to the demand.

## GOING TO HAMILTON.

The officers of the Ontario Society of Domestic Sanitary and Heating Engineers are going to Hamilton on the evening of Friday, March 1, for the purpose of getting the members of the trade in that city interested in the formation of a local association.

## Personal Notes.

W. A. Stanley, for a number of years Assistant Secretary of the Montreal Builders' Exchange, has accepted a position as manager of the Window Strip Company, 263 St. James Street, Montreal. This change will not interfere with Mr. Stanley's duties as Secretary of the Montreal Master Plumbers' Association.

Wm. Roden, manager of Warden-King, is in Toronto this week on business.

### Take Over Business.

Sault Ste. Marie, Ont.—The Calver-McDowell Co. have taken over the business here of J. E. Farrell & Co.

### Go to Edmonton.

Wetaskiwin, Alta.—Varts and Minty, plumbers of this place, are going to Edmonton, where they intend to start in business.

### Gas Inspector Wanted.

Brantford wants a gas inspector employed by the Dominion Government. Several cities have the services of such an official, but this city, unfortunately, depends on the inspection of the Hamilton appointee. Representation will be made to the Government for the appointment of an inspector, who will have supervision over gas and electric meters throughout the city.

## PIPE THREADING MACHINES.

The Armstrong Manufacturing Co., of Bridgeport, Connecticut, have just issued a new half tone 6x9 catalogue, showing their full line of pipe threading machines and parts. Each part is either lettered or numbered, so a customer can order repairs to replace broken or worn parts from the catalogue and save time, which is very important in case of a break down.

The pipe machines manufactured by the above concern are first-class in every particular, only the best material being used in their construction; parts interchangeable. The No. 0 and No. 00 machines are equipped with the genuine Armstrong adjustable dies. The No. 1, No. 1½ and No. 3 machines have bits for threading.





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The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joints or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

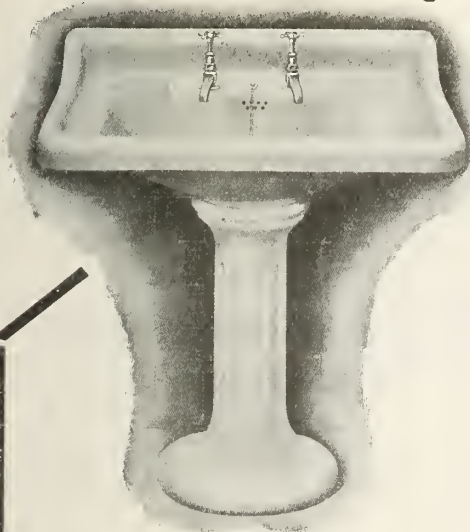
We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.



Steam Radiator Valve.

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No. 857—Pedestal Lavatory

Better get our circulars and prices at once, as we have a large variety from which to select. Write us NOW.

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are invariably the result from recommending,  
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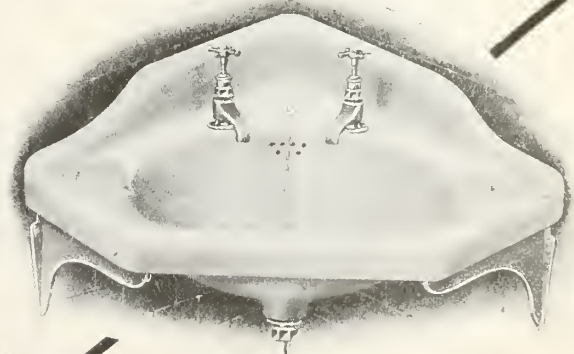
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It cannot be excelled in quality, design and construction.

This lavatory is absolutely impervious to crazing or chipping, and always attains its rich, glossy appearance. This feature is certain to appeal to modern architects and is greatly appreciated by all users.

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FOR SALE—PLUMBING, STEAMFITTING, tinsmith and stove business, in a first-class northwestern Canada town. First-class proposition. Good reasons for selling. Apply to Box 639, Plumber and Steamfitter, Toronto. (6)

### SITUATION VACANT.

WANTED—PARTY HAVING FULL KNOWLEDGE of plumbing, steam and power goods to assume management of factory and supply house about to be incorporated. Must make an investment to insure proper interest in the business and be incentive to get results. Address "Manager, Factory and Supply House, c/o Plumber and Steamfitter," Toronto. (7)

WANTED—AN ESTIMATOR FOR A LARGE plumbing, heating and ventilating firm in the west, who can take off quantities, make plans, and must be thoroughly versed in the various heating systems. Must have ability and experience. State fully qualifications, references and salary expected and when could commence duties. Apply Box 642, Plumber and Steamfitter, Toronto. (7)

WANTED—A FIRST-CLASS STEAMFITTER and plumbers' foreman to take charge of a shop, one who can figure, draw heating plans, estimate on all kinds of work and also manage men. To a really good man the best of wages will be paid. None but one who will take an interest in his work need apply. Enclose testimonials and state experience and salary to the Mauville Hardware Co., Prince Albert, Sask. (5)

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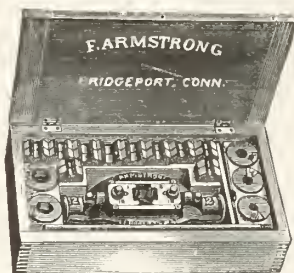
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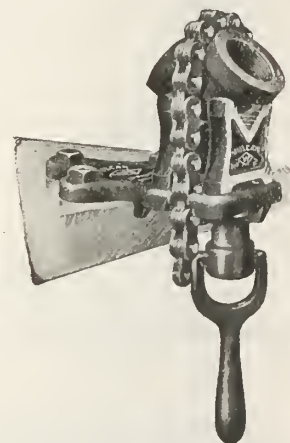
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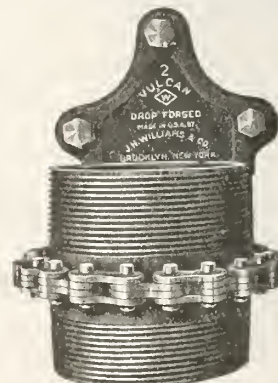
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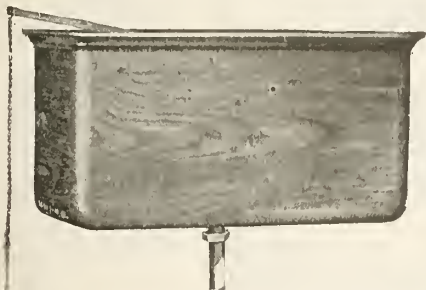
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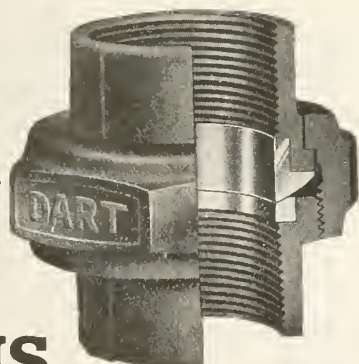
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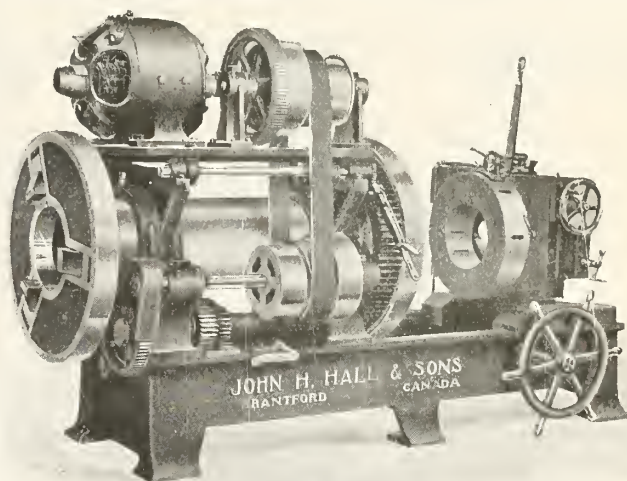
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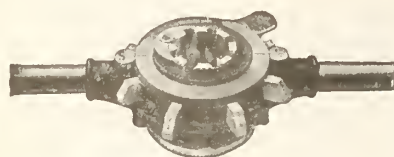
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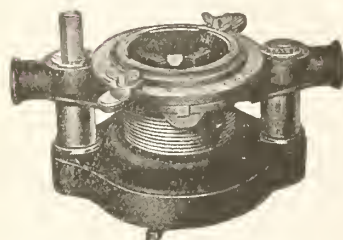




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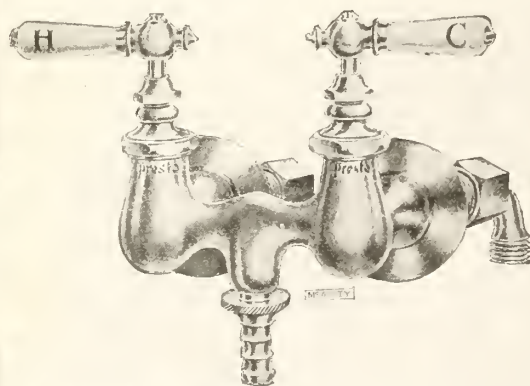
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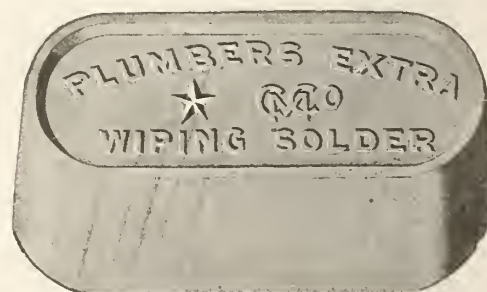
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*and Sanitary Engineer of Canada*

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Vol. VI.

Publication Office : TORONTO, MARCH 15, 1912.

No. 6



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GENERAL OFFICES AND FACTORIES · PORT HOPE · CANADA ·

**“Artistic Sanitation In The Home”**



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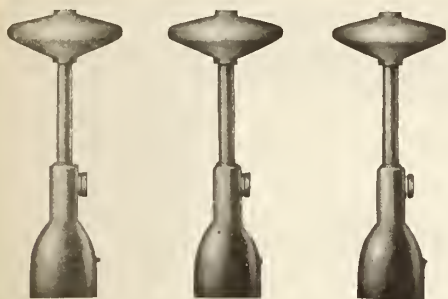
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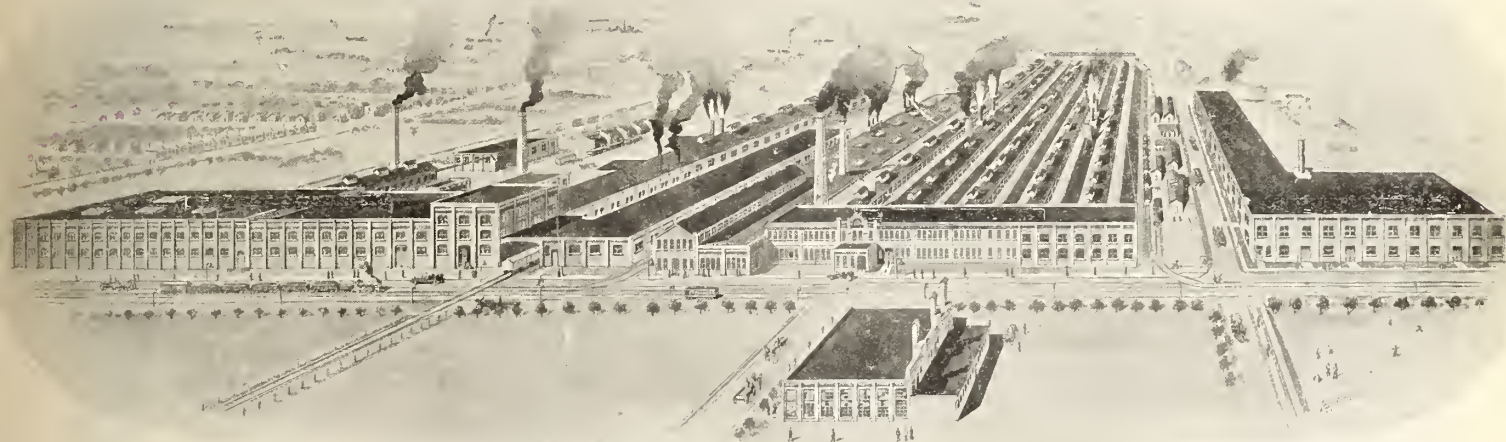
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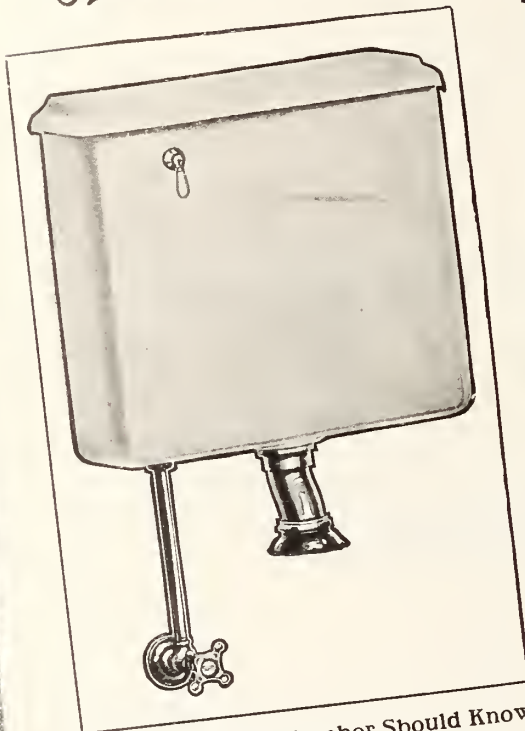
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THE plumbing trade in Canada have shown their realization of what quality means in plumbing Fixtures, by their ever-increasing interest in "Standard Sanitary" products. They have been quick to grasp the business truth that high quality Plumbing Fixtures such as they can be sure of when they supply "Standard Sanitary" are the only safe kind to recommend.

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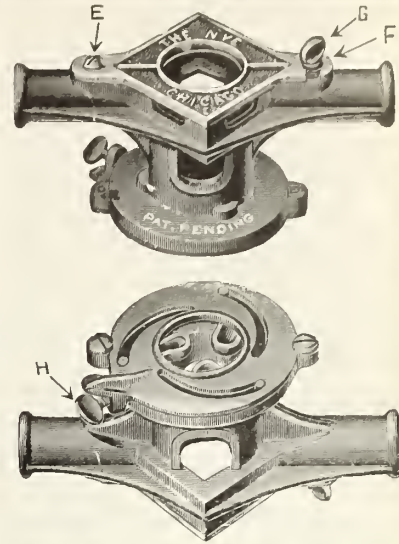
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PLUMBER AND STEAMFITTER



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UNCONDITIONALLY  
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EXTENSIVELY  
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EASILY INSTALLED—  
Because Accurately Made.



### Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

## STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

Showrooms, 80 Adelaide St. E.

MONTREAL  
138 Craig St. W.

# A Progressive Western Canadian Firm

A Sketch of the Business of the William Head Co., Calgary—R. J. Priestly, Managing Director, is a Prominent Figure in Association Work.

**I**N this issue a picture is shown of Mr. R. J. Priestly, of Calgary, probably one of the best known sanitary and heating engineers in western Canada.

Mr. Priestly is an old Kingston and Toronto boy and his features will be recalled by many members of the craft in these places, more particularly in Toronto, where he passed the largest part of his years of maturity.

Having thirty years' experience in the craft, Mr. Priestly can claim to be among the pioneers of modern sanitary and heating engineers, as the greatest strides that have taken place in our craft have been during these last thirty years, and he has seen the plumber and fitter rise to his present proud position as a scientific engineer.

Mr. Priestly began his apprenticeship in 1882 with McKelvie & Birch, of Kingston, Ontario, and after serving his time there as a steamfitter's apprentice, went to Toronto in 1887, in which city he remained until 1904, when he left for the west to take the position of foreman with William Head, who at that time conducted the largest plumbing and heating establishment between Winnipeg and Vancouver.

In 1906 Mr. Head decided to retire from active participation in the business, as he found his health was not as good as it might be; and the business was then transformed into a joint stock company, under the name of William

Head Co., Limited, Mr. Head retiring from active interest and Mr. Priestly taking the managing directorship in his hands, which managing directorship he still holds.

Since this change the business has steadily advanced, keeping pace with the phenomenal expansion of Calgary, and always maintaining its place as one of the leading firms in the city and in the west.

The firm confines itself distinctly to sanitary work, steam and hot water heating and ventilation, leaving tinning and hot air work to the tinsmiths of the city; Mr. Priestly considering that in order to maintain a proper standard of excellence in the higher branches of the craft, it was advisable to devote themselves entirely to those lines.

The average number of employees on the pay roll during the year is generally in the neighborhood of fifty, and with this staff the firm finds no difficulty in handling the work that comes their way, whether small house work or large contracts.

In 1908 the firm found that owing to the many calls on them for work at points outside of Calgary, it was difficult to handle everything from the Calgary office and a policy of expansion was decided upon, which resulted in the establishment of a branch at Lethbridge, the largest centre in Alberta south of Calgary. This branch is under the manage-

ment of Mr. J. Bradshaw, and since its inception has met with a very gratifying measure of success.

## Was First President.

Mr. Priestly personally has always been a firm believer in association work, and has always been in the van along these lines in Calgary; in fact, being one of the original organizers of the Calgary A. S. & H. E. and was its first president, holding office from November, 1908 (the date of its formation), until January, 1910.

He has always held some office in the Association, being at the present time a trustee in conjunction with Jas. Marr. He also holds the office of chairman of the Heating and Ventilating Committee of the Canadian Society of Sanitary and Heating Engineers.

Mr. Priestly was one of the Calgary delegates to the last National Convention at Fort William and Port Arthur, where he renewed acquaintanceship with several of his old Ontario friends and fellow craftsmen, and on his return from this convention was appointed chairman of the Exhibition Committee of the Calgary A. S. & H. E., in which position it is up to him to see that the exhibition part of the coming convention is well taken care of.

While a firm believer in the benefits to be derived from association work, and a hard worker in the formation of associations, whether local, provincial,



View of a part of the show room of the William Head Co., Calgary; showing private offices.





View of part of the workshop and fitting department of the William Head Co., Calgary.

or national; Mr. Priestly's policy has always been one of reservation of strength: "Be sure you are right, then go ahead" is his motto, and judging from the success that has attended the Calgary Association, which has always gone along these lines, it is a motto that might well be copied by others.

Many of the Toronto sanitary or heating engineers will be very glad to be able to renew old friendship with Mr. Priestly and they will certainly have this opportunity this coming summer, as he will be very greatly in evidence during the convention.

be of great interest and productive of great good.

#### MAY BUILD NEW WORKS.

St. John, N.B.—T. McAvity & Sons, Limited, would like to secure property for large extensions to their plant. Mr. Knowlton has submitted a plan showing the shops the McAvitys proposed to establish on the Ballast wharf if they secured the site. At present the firm's iron foundries are distributed in eight buildings, and the brass works in seven buildings. The cost of production has greatly increased and the firm find it difficult to compete with other cities. If granted a lease of the Ballast wharf the company would erect machine shops along the harbor front, an iron foundry on the southern side, and a brass foundry on the northern side. A power house would be erected, also pattern shops, woodworks department, stock rooms and a pipe foundry. The iron foundry would be completed this summer, and the other buildings as soon as the business warranted.

## Made a Plea for Separate Contracts

CALGARY.—The annual meeting and convention of the Alberta Chapter of Architects, which has just been concluded in Calgary, was wound up by the giving of a large and well attended banquet. Several very interesting speeches were made during the course of the feast, and the replies to the toasts were all in very happy vein.

Among those present was Mr. E. J. Young, president of the Calgary Association of Sanitary and Heating Engineers, who when called upon to reply to the toast of "Our Guests," made a very pleasant impression.

Mr. Young took advantage of the opportunity after speaking briefly on the immense strides taken forward in western architecture, the credit of which was all due the architects; to make a very strong plea for separate contracts. He pointed out that by bulking contracts and giving the general contractor full authority over the sanitary and heating engineer, the architects were militating against the sanitary or heating engineer

doing his best work. As practical engineers themselves, the architects could understand some of the difficulties that were bound to arise in the path of the sanitary or heating engineer, and could make allowances, and they could also see that the heating or plumbing was not held up by the general contractor.

By separating the contracts, better results were attained, better feelings were engendered, and general satisfaction would be found on all sides.

Mr. Young's remarks met with a very favorable reception, several of the architects present admitting that the sanitary and heating engineers' work was too important and scientific to be at the mercy of the general contractor.

Mr. Young also extended a very hearty and cordial invitation to all the architects present to attend the coming convention of the S. and H. E., examine the exhibits there displayed and be the guests of the delegates, to which many of those present replied accepting the invitation, as they thought such an exhibition would

#### New Partnership Formed.

Kingston, Ont.—W. C. Bennett, conducting a plumbing and tinsmithing business on Princess street, has taken into partnership E. P. Halligan, of New York. In addition to the plumbing and tinsmithing business, Bennett & Halligan will handle stoves, paints and general hardware.



# Attend the Ontario Prov. Convention

President Legrow Explains Why All Members of the Trade Should Make it a Point to be on Hand—The Future of the Trade Demands Good Attendance—Something of What Has Been Done.

President Legrow makes the following appeal to members of the trade in Ontario to help along the cause of the Association by attending the Good Friday Convention. He says:

"Do you say that the former times were better than these? If so, have you considered the progress that is being made in Ontario provincial sanitary and heating affairs. Any member of the trade who considers what has been done should manifest his approval and concurrence by attending the provincial convention at Toronto on Good Friday.

"The directors of the Ontario Society of Domestic Sanitary and Heating Engineers have been working hard since the last meeting and will have an ambitious programme to present at the Good Friday Convention. The chairmen of the various committees will have reports to submit, showing the work which has been done in their various departments.

"The meeting will be held at 10 a.m. in the Temple Building, at the corner of Bay and Richmond streets. It is anticipated that the attendance will be large. Make it larger by being there **yourself**.

"The corresponding secretary, G. F. Frankland, has been keeping in constant touch with the trade. He has been sending out letters regularly to all members of the trade whose addresses he has been able to secure. You know how many letters you have received from him; and you also know how many he has received in reply from you.

"At the present time important Christian bodies are voting on Church Union, would this have been possible twenty years ago? I trow not. Why is it being done now? Because men of large vision see far. Can one live to himself in the midst of people?

"Now, let us reason this matter of trade organization out. Don't get excited or over-anxious. Don't say that things are not coming our way very fast. No society can become worth while to you unless you become worth while to it. You need the help and support of your business associates in country or in city. You cannot grasp the problems that your work presents unless you come in contact with others and learn from their experience. Concentration of thought and personal contact count for much. If you have any rough edges to be ground down, any hollow places to be filled up, any crooked places you

would like straightened out, you can accomplish it by meeting and associating with other men in the trade. Our Association becomes a clearing house of ideas and the opportunity to better themselves is presented to all.

In order to improve conditions, in order to set things on a higher plane, we must meet together and discuss trade conditions and topics. If you 'can't come, send us a letter. If you have suggestions or information, give us the benefit of it. If you desire to see a certain reformation accomplished, let us know and the best of our energies will be devoted to the accomplishment of any good suggestions.

"We are making good progress. The charter has been obtained and we are ready to make a number of important changes. The Good Friday meeting will be a crucial one, however. We want a large attendance. Will you be there?"

## RECENT VISITORS.

A recent visitor at the office of Plumber and Steamfitter was C. R. Frost, of the firm of McKnight & Frost. Edmonton. He was in this part of the Dominion in connection with a Builders' Exchange convention and took the opportunity to visit old places and friends. Like most of the men of the West, Mr. Frost came from the east



The firm of McKnight & Frost—G. F. McKnight (left) and C. R. Frost (right).

originally, his home being Owen Sound. He learned his trade in the pioneer dry town before striking out to the land of wheat, weather and wonders.

A typical westerner is C. R. Frost—full of enthusiasm and push and just steeped with belief in that wonderful western country. He has also abiding faith in the good results to be obtained from co-operation and association. His partner, G. F. McKnight, is the Albertan vice-president of the Canadian Society of Sanitary and Heating Engineers, while Mr. Frost himself is president of the Edmonton Builders' Exchange. He talks interestingly of the good work the latter body has done in bringing the members of the different trades together and in ameliorating certain evils.

By the way, the firm of McKnight & Frost put in a job last year which, as far as we know, has never been duplicated in Canada. They used galvanized iron fittings right through one of their largest contracts—that of the provincial court house. The specifications called for this and it had to be done despite the fact that some difficulty was experienced in getting the supplies.

Another welcome visitor was J. E. Farrell, of North Bay. Mr. Farrell was in Toronto on a long promised holiday and he renewed acquaintances with a number of Toronto members of the trade. "J.E." is another who believes in convention work and he expressed his pleasure with the progress being made in Ontario. He is progressing some himself and is taking a leading part in public affairs in North Bay.

## TESTING PRESSURE.

In the March 1 issue it was stated that butt weld pipe was tested to a pressure of 300 pounds per square inch, and lap weld to 500 pounds. It has been learned that all pipe manufactured by the Canadian Tube and Iron Co., Montreal, is of butt weld quality, and that every length is tested to 600 pounds pressure per square inch.

## Starts in Winnipeg.

Winnipeg.—F. W. Philips has started in the plumbing business here.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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TORONTO, MARCH 15, 1912

A CONTEMPORARY, The Metal Worker, comments on the anniversary of the American National Association of Master Plumbers as follows:

"To adorn the future with a record of as commendable achievements as awakens pride and secures support for the National Association of Master Plumbers should be the aim of every member who takes a part in the thirtieth anniversary celebration, which will be conducted by associations throughout the country this month. Although a celebration is the cause for jollification, it would be a mistake for any local to neglect to review the history of the National Association in order to impress upon those who will make its history for the coming years, something of the intense struggle for principles by those who "built better than they knew." Much has been heard all through the existence of this body of trade protection, which would have a sordid ring and alone could not have held it intact, but there can be presented a splendid array of other achievements in which the people have benefited wherever, and even beyond the localities in which its activities have been concentrated. State laws and local regulations now make it incumbent that there shall be such disposal of household waste as will prevent the menace to life and health which it proved before the influence of an organized and united movement showed its correctness in a reduced death rate. The study of sanitary conditions and constructions has made its impress upon modern sanitary equipment in its every detail. The association has left a feeling of brotherhood and helpfulness across the land which is not the least of the things for congratulation. There is evidence of not only a continuance of all the work that has occupied its endeavors in the past, but of an extension of its beneficent influence on public health to rural districts. By all means the anniversary celebration should be made one of entertainment, of social pleasure, and a reunion attended through special invitation by all the old bearers of the burden in the heat of the formative period, but it should also be made the occasion to impress upon the public the altruistic spirit which has done so much good. The anniversary may well be attended with general good wishes from the people and a determination on the part of every member to continue the association virile for good for three times three decades."

THERE IS a great future opening up before the sanitary and heating trades. Giant strides have been made of late years but there are those who declare that the work is only in its infancy and that the future will see wonderful developments. They are undoubtedly right.

### THE FUTURE OF THE TRADE.

Although compared with the appliances in use say ten years ago, the plumbing and heating systems of to-day appear to be practically perfect, there can be no doubt that years to come will see improvements quite as great effected. The world has awakened to the necessity of proper home appliances and conveniences from the standpoint of health and comfort. There is an ever-increasing demand for the best that scientific manufacture can produce and an ever-increasing appreciation of the importance of the subject.

The sanitary and heating engineer can look forward to doing a highly important part of the world's work in the future. He must prepare himself for a work which will demand higher efficiency than is exacted from him at present and a greater insight into matters of a scientific nature. He must expect to be called upon to do things which are beyond him at present.

It follows that the craft must advance with the times and must keep abreast with the improvements which man effects in all directions. To do this, it will be necessary to put the trade on a better footing than at present. There are a number of evils which must be purged—evils, which can only be overcome by individual advancement. Each master plumber must do his best to improve his own knowledge, his own methods, his own standing and his own understanding. When the desire to do this becomes general, there will be a gradual improvement and the trade will see the gradual elimination of the more general evils.

It might be added that the best way to effect this improvement in the rank and file of the trade is to push along association work. Men get together in that way. They acquire new ideas, a new incentive to conduct their business on a better basis and to assist in the elevation of the trade.

FORTY-SEVEN calls in six hours on a Sunday, is quite a record. Can anyone beat it?

\* \* \*

Gatherings like the one held by the Montreal Master Plumbers, on Wednesday, cannot help do good. A social gathering of that nature draws members of an association more closely together than a vast number of business meetings.

# Auxiliaries for Pressure Systems

An Interesting Address on Some Phases of Hot Water Heating—The Results of a Number of Interesting Experiments.

THE following address was delivered by J. J. Wilson at the annual meeting of the American Society of Heating and Ventilating Engineers at New York.

Because of the increasing demand and use of hot water heating auxiliaries, such as generators, accelerators, impulsers, heat retainers, etc., in hot water heating systems, especially those used for residence heating, the author is led to believe a description of the methods used to install some of these specialties may be of interest. In 1896 he was engaged to design a hot water heating system for a small hotel, having about 41 radiators. After going over the building plans, he decided to have the heating

these cases, good results were secured, as to quick circulation and moderate use of fuel. It is believed that both of these plants are still in use and giving satisfaction.

In 1906 a number of calls were received to design systems of this character, and after trying several specialties used in closed or pressure systems, the author settled on the Phelps heat retainer, shown in Fig. 3. He has designed about sixty systems using this specialty, and in every instance has secured good results in quick circulation; and where proper attention was given to operating the boiler fire, economical results were obtained in the use of fuel.

In 1909 the author was engaged to design a hot-water heating system for a heating contractor who had considerable experience with closed systems of hot-water heating. The heating plant was for a residence in the Blue Ridge Mountains, in a location much exposed to high winds and low temperatures. The heating contractor had invented a novel method of installing his expansion tank in the cellar alongside of the boiler and also a system of damper and draft control in conjunction with the other specialties. This system was installed and proved a success. Several plants of this kind were installed in 1910, the inventor making an improvement in the different attachments used. Finally he obtained a patent this summer on the invention, and now has applied for a patent on his draft control.

Fig. 4 shows the tank and complete construction. The tank of 20 gals. is located in the cellar at any desired location, but preferably alongside of boiler. The pipe connecting the bottom of tank with the boiler return has a valve to cut off such connection, when desired. The top of the tank has a relief valve on it and an attachment for operating a lever arm that closes and opens draft door on boiler and the check draft damper on the smoke pipe. On the side of the tank, attached to tank draw off, there is connected a small air pump, similar to those used for obtaining a pressure in gasoline fire pots, and alongside of it on the same run of pipe is connected a pressure gauge.

The operation of the system is as follows: The valve on the line between the boiler and the tank is closed and the system filled with water, as it is usually done, then two buckets or about 10 gals. of water are drawn from the system. Air is pumped into the tank until,

for a two-story residence, the gauge registers about 5 lbs.; and so on, the object being to have enough pressure to balance the height of water in system so that the top radiators are kept full of water. Then the valve between the tank and boiler is opened and the gauge will register about zero. Fire is then started, and system is operated by means of damper arm at the tank. Draft can be set to close off at any pressure desired. We have used from 4 to 10 lbs. at the gauge.

We find that the system is extremely sensitive to the action of the fire; circulation is very rapid and equable. The most distant radiator from the boiler heats almost simultaneously with the one nearest boiler. As soon as the pressure in the system exceeds the amount desired, water from the system enters the expansion tank and thus increases

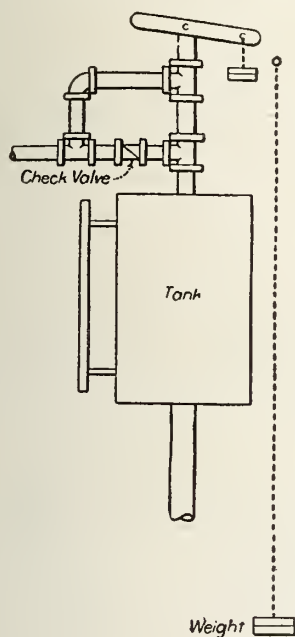


FIG. 1

contractor put in a closed or pressure system of hot water heating.

An overhead system was designed with the mains on the fourth story ceiling, and the expansion tank was placed in an accessible position, between the ceiling and the roof. The author used a lever safety valve on the tank, a chain from the lever down into the room under the tank, upon which chain weights could be placed, to increase the water temperature in the system, when operating. Fig. 1 shows auxiliaries attached to tank.

In 1903 the author designed a hot water heating system for a fire engine house. The mains were located in the cellar and tank was placed above the highest radiators. Fig. 2 explains the construction at the tank. In both of

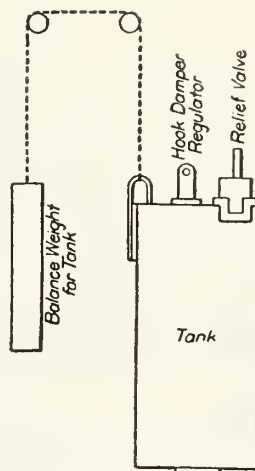


FIG. 5

its weight, causing it to drop, through a gland joint in the connection between it and the boiler. In dropping, it tips the damper lever arms, causing the draft door to close and the check draft in the smoke pipe to open. As soon as this excess pressure subsides, as it will do, caused by checking the draft, the tank, which is balanced by a counterweight, shown in Fig. 5, resumes its former position, and the draft door of boiler is opened and the smoke pipe check damper closed.

The distance the tank drops from the expansion of water into it is only  $\frac{1}{2}$  in. The fulcrum and lever arm multiplies the distance of the tank drop sufficiently to operate the draft door and the smoke-pipe check. The use of the air-pump in connection is a valuable feature, as it enables the operator to have



a resilient cushion of air to balance the static height of the water in the system. The relief valve at the top of the tank is designed to make it impossible for the valve seat to stick. So far the inventor has never met the condition of the water escaping from this relief valve. The amount of radiation used to heat rooms connected to this system has

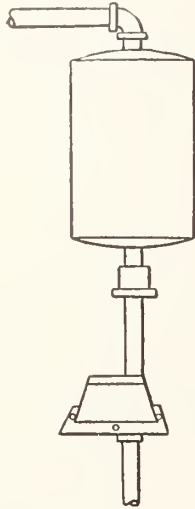


FIG. 3

been decreased from 10 to 15 per cent. of the amount used for an open system of hot-water heating.

The sizes of the flow and return mains are also reduced, their area being not less than the total sum of the area of all radiator connections, which are usually as given in the table.

## Size of Hot Water Radiator Pipe Connections.

### First Floor:

Up to 50 sq. ft. radiation.....  $\frac{3}{4}$

Up to 100 sq. ft. radiation..... 1

### Second Floor:

Up to 50 sq. ft. radiation.....  $\frac{1}{2}$

Up to 100 sq. ft. radiation.....  $\frac{3}{4}$

### Third Floor:

Up to 60 sq. ft. radiation.....  $\frac{1}{2}$

Up to 120 sq. ft. radiation.....  $\frac{3}{4}$

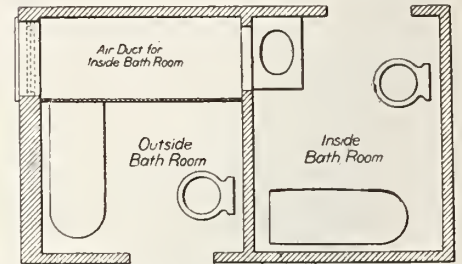
The inventor in experimenting as to the effects produced by high pressure, running at one time as high as 30 lbs., indicated on the tank gauge, notes there does not seem to be any leakage in system, and ascribes this condition to the resilient cushion of air that the water presses against. The locating of the tank in the cellar, together with the other mentioned auxiliaries, in connection with a hot-water heating system, seem to the author to be far in advance of anything heretofore designed for such a purpose. At this writing more definite engineering data, such as outside temperatures, temperatures of rooms, amount of radiation, amount of fuel burned per square foot of grate surface, velocity of water through mains and other desirable data are not available, as the plants are in a distant State, but it is hoped in the near future to be able to supply the information. The system is known as Walter's areo-balance sys-

Diameter of Pipe, Inches.

## VENTILATING INSIDE BATHROOM.

The Metal Worker gives the following explanation of a method to ventilate an inside bathroom:

While most modern bathrooms, which do not have an outside exposure, are provided with ducts or other means of ventilation, rooms in some of the older buildings have not been provided with such necessary means of introducing fresh air and removing that exhausted.



Plan of bathroom showing ventilating duct.

In the construction of the Hotel Hermi-tage, at Nashville, Tenn., simple and effective methods for securing this have been provided. The bathrooms are arranged in duplex plan and over the window of the outside bathroom is an opening to an air duct constructed of concrete 3 ft. x 2 ft. 6 in. This passes through the ceiling of the outer room, and a ventilator is installed in the wall of the inside bathroom. These ducts are of sufficient size to insure a proper circulation of air in the room without any mechanical equipment, and the outside

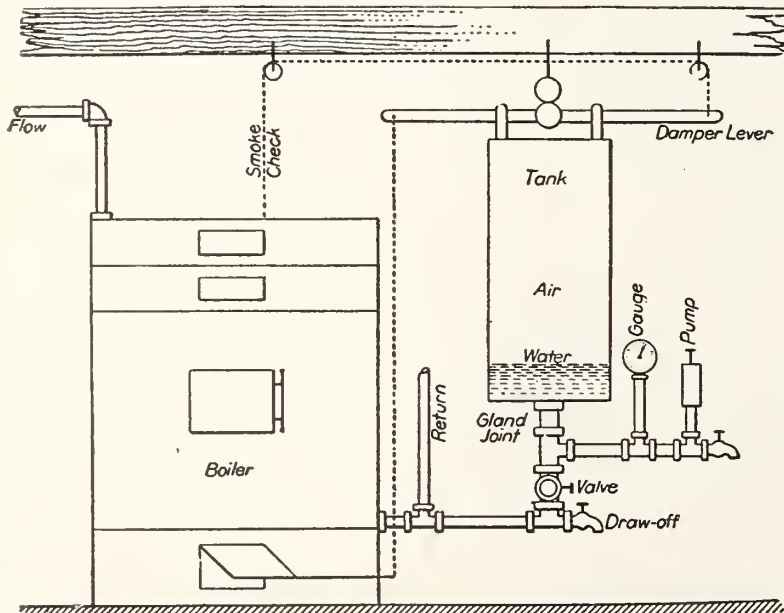
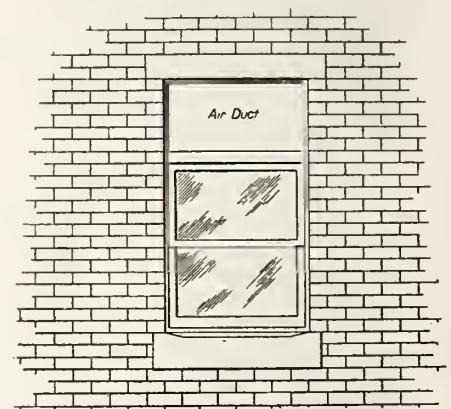


FIG. 4—COMBINED EXPANSION TANK AND DRAFT CONTROL

All branch connections are taken from the side of flow and return mains using two 45 deg. ells to get the proper elevation.

tem of hot-water heating, and was invented by Felix Walter, of Highfield, Md., but as yet has not been introduced outside of his personal contracting.



View of ventilator for inside bathroom.

appearance of the ventilator is such that no deterioration in the architectural effect is made. The discomfort attending the use of a bathroom of this type without ventilating appliances, especially where all the windows in a building are equipped with metal weatherstrip, is obvious, and a simple provision like this is to be much commended.



# POINTS ON HEATING

By CHAS. H. DENISON



Chapter 26.

## SOME ADVERTISING CONSIDERATIONS.

You take the average steam-heating contractor (or plumbing manipulator, be it also said) and he is sure a frost for the printing man. Leaner than the leanest in old King Pharo's time.

Seems like those selling the goods from their shops don't care whether the public know where their number is or not. Oh yes! They've got it on some business stationery (perhaps). A dinky illustration and words to the effect that they are "still doing business at the old stand," and that "satisfaction is guaranteed," while "estimates will be cheerfully furnished free" at any time. In the first place, one part of the latter statement is a fib pure and simple. Estimates are hardly ever "cheerfully" furnished free. The contractor is mostly huffy on that point and all the more so if he chances to loose out on the bid. Remember the letters you have seen in this paper where certain masters have arrived at the conclusion that these estimates should be paid for? But that's getting way off the subject. I started out to say something about advertising, or perhaps, to be more exact, the lack it as pertaining to master steamfitters and plumbers.

At various times and in different papers and magazines there have appeared articles and letters containing numerous kicks on the way the "catalogue houses" were dipping into the plumbing and heating business by mail. What's the answer? Mostly that the plumbers and fitters simply lay down on their business and have let such a state of affairs come to pass.

But such an answer (although it is generally accepted as a part of the truth at least) does not begin to tell the whole truth. Far be it from such. These houses that sell, but do not install, that ship, but are never at the receiver's end to help unpack; that unload goods by the car load upon the reading public, have found out what the plumber does not seem to realize, and that is that the public reads. Another sentence might be tacked on, making the reading as follows: "The public reads ads. that promise to save them dollars."

I didn't say would save—merely promise to save. Now just what does the plumber have to offset this campaign of reading information scattered, as the leaves of autumn all over the land? Merely his business stationery, or possibly a small "ad" in the home paper, or maybe he depends upon some of the "ads." by some large manufacturer who makes use of some of the magazines or newspapers of national reputation. Even these manufacturers' "ads" do not begin to compare in selling force with the line of conversation handed out by the catalogue houses. I suppose I shall be accused of not knowing what a real "ad." resembles, but at risk of such happening. I wish to ask for a candid comparison of the page of most any catalogue house and a page ad. inserted in some of the papers or magazines by nearly any manufacturer in our lines.

You will see very readily that the catalogue house has put it all over the other concern in selling points, descriptions and clearness. In short that the catalogue houses have their matter so written up that the customer can not fail to understand. He couldn't go wrong if he tried to, no matter how hard. Does this point a moral? Well, my friend, that depends simply on the thickness of your skull. If a catalogue house can spend thousands and thousands of dollars and unlimited patience in arranging their advertising matter, and then spend again time and money to circulate the same, and as a result, the orders come pouring in until even the most dense plumber or fitter cannot avoid noticing, it proves that circulated conversation in print gets results.

These ads. may not be according to any ethics that you or I wot of; they may be untechnical, printed to look like Hob, but they draw dollars.

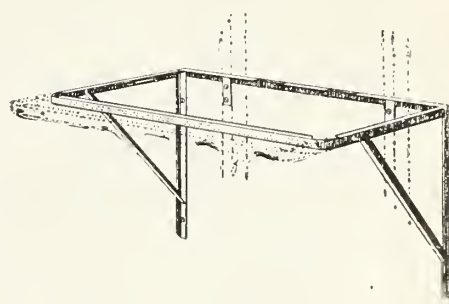
What's little John Smith, or one hundred or one thousand of him, or more and then some, going to do against any such assortment as has been outlined? He might produce some result, if any harmonious, united effort, could be made; but then alas and alack, if the truth be told he is either too blind or too thick-headed to see just where his interests lie.

A few more years of sleep and slumber

and he'll awake to find that he has no interests with that same John Smith. Regardless of whether or not you admire the catalogue houses, their goods or their manner of selling, it's a cinch that you have got to give it to them on the thoroughness with which they advertise and the drawing power of the copy that they shoot into print. There is a big lesson here for those in the plumbing business if they can but see it. They used to say "there's none so blind as those who won't see." Is such a one you, I wonder?

## COMBINATION SINK AND PUMP.

The Jordan & Steele Mfg. Co., of Hastings, Mich., is meeting with a most gratifying success in introducing the "Sanitary" combination sink and pump frame, which it recently placed on the market. This frame is made of  $\frac{3}{4}$  in. angle iron, which fastens to the wall by clips securely screwed to the studding, doing away with nailing boards on the wall to hold the brackets. The sink rests in the frame, and no drilling of holes in



The Sanitary Combination Sink and Pump Frame.

the rim is necessary. This frame is absolutely sanitary, as there is no place for water, grease or germs to collect, and its installation will thus eliminate all such bad odors as are quite often noticed where boards are used around the sink. This sink frame is made in several sizes to meet all requirements. The manufacturers will be glad to send interested parties full particulars upon application mentioning "Plumber and Steamfitter."





# The Question Box



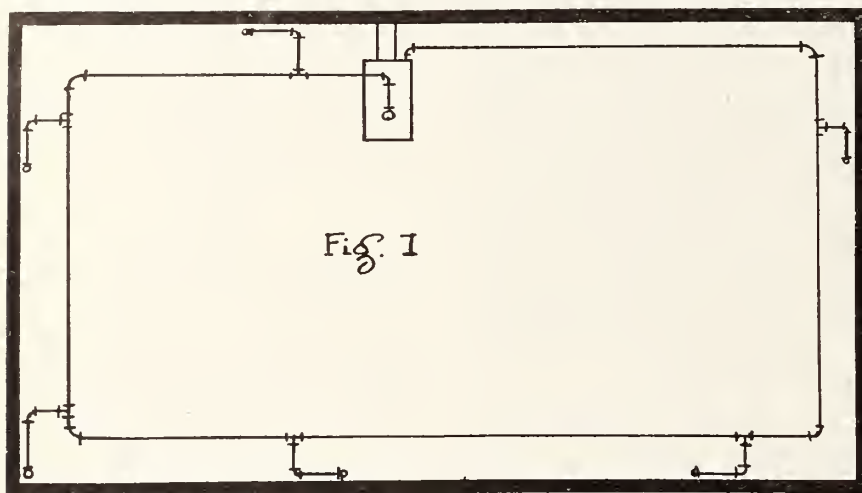
Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## ASKS POINTS FOR SKETCH.

Editor Plumber and Steamfitter.—Would you kindly give me a few points that could be used in drawing supposing

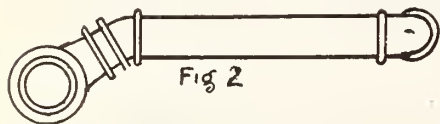
dentally met, we believe that we should draw him a rough cellar sketch which might be similar to that shown in Fig. 1. This would give the customer an idea of

nipple to make an easier expansion. There are other points which we may give at a later date.—D. C. H.



I were out talking a steam job to a customer and wanted to show him things and had nothing but a piece of paper, a

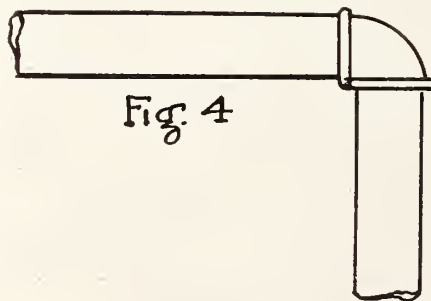
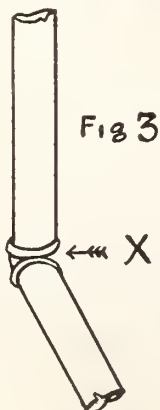
the general location of matters in the cellar, the place where the boiler would stand; the runs of the steam main and branches and an idea of how little room the apparatus would take as compared with some other means of heating. To illustrate how the branches are taken from the main, you might make a draw-



pencil and a pocket rule with me?

Peter Barkley.

If we had known about the customer beforehand, we believe that we should



ing similar to Figure 2, which will give him a fair idea of it. To bring out two unfavorable ways that fitters sometimes use you might make drawings like Figure 3 and 4. Figure 3 shows the connection by one "ell" of the end of a branch and the beginning of a riser. This should be made with two ells and a close nipple instead of as shown. Figure 4 shows the way some fitters start out from the top of the boiler and should also be made with two ells and a short

have gone to him better prepared than you mention, but supposing that it happens to be some one that you have acci-

## THE HEAT UNIT.

Editor Plumber and Steamfitter,—In reading the paper I sometimes see the words "heat unit." Now, will you be kind enough to explain to me in the next issue of the paper just what it means?

A. Q.

It is stated that a unit of heat is that amount of heat required to raise the temperature of one pound of water one degree Fahrenheit. It is used to measure the quantity of heat.—D. C. H.

## AMOUNT OF COAL BURNED.

Editor Plumber and Steamfitter,—Can you give me any information on the amount of coal burned in low pressure steam or hot water heating boilers?

John C. Joselyn.

There are so many differing circumstances, such as different boilers, different men setting them up and running them, a difference of chimneys, that the question is rather a difficult one to give reliable information on. However, it may be stated that, in general, an ordinary house heating boiler under ordinary conditions, will burn about five to eight pounds of coal an hour per square foot of grate surface.—D.C.H.

## "ALLOWED" WRONG.

Editor Plumber and Steamfitter,—I figured a steam heating job for about 1,000 square feet of radiation and "allowed" for a boiler to carry 1,200 square feet. Now, it does not work well enough. Can you tell me what is the matter?

C. E. McV.

Guess that you "allowed" dead wrong. On such a job you could have over 200 feet of radiation in the mains if the runs were very long and then you would have the full draw on the boiler's powers and no extra power on which to rely. You should have figured in the radiation in the mains, branches and risers and then "allowed" at least 25 per cent. for extra power on the boiler—or used a

Editor Plumber and Steamfitter,—  
What should be the size of supply pipe  
for a hot water radiator that has forty  
square feet of radiating surface?

It would depend upon the system, the location of the radiator and the man who performed the work. If an open tank system, radiator located at some distance from the boiler and on first floor, we should say use a pipe one inch in size, and on second floor make it of three-quarter size. On a pressure system, a three-quarter pipe on first floor and one-half pipe on second floor would answer. On pressure work we have observed over one hundred square feet of radiation on a three-quarter-inch pipe, and the radiator worked in a perfectly satisfactory manner. Regarding the workmanship the pipes should be untrapped and thoroughly reamed and all joints tight, the flow and return made with long turn fittings and fewest number of turns possible.—D. C. H.

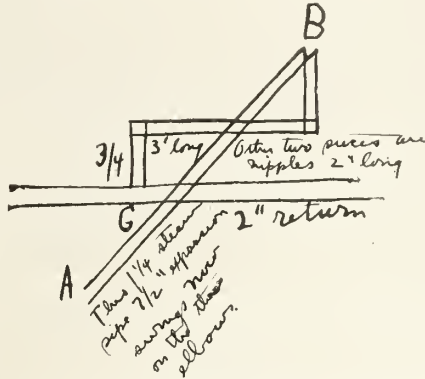
Editor Plumber and Steamfitter,—Can you tell me how much radiation weighs a foot, and also about how much inside space there is?

Speaking in average terms we believe that it has been found that one foot of prime radiation weighs about six and three-quarter pounds and holds something like one pint of water.—D. C. H.

Editor Plumber and Steamfitter,—One of the fellows in the shop insists that it is all right to use check valves on the kitchen boiler on a plumbing job. What can you say about it in the paper?

We might say a good many things. Such a proceeding is sometimes advised by certain water boards who are afraid the hot water will back-set and affect the water meter. It is a dangerous practice and many serious explosions have resulted from such a proceeding. Leave off the check valve from any such plumbing jobs if you value your own reputation and the safety of your customer.—  
D. C. H.

Editor Plumber and Steamfitter,—I wish to enquire how to care for 7½ in. of expansion in a steam pipe without using expansion joints where they carry an average of forty pounds pressure, which is sometime turned off two and three times a day. The way I have it working is shown in the rough sketch accompanying. The fittings, both malle-



Put in an old-fashioned "seissors" approximately at point C on the 1¼-in. pipe A-B. The "seissors" look like this (looking down).

a short nipple. The length of the pipes 1-2 and 2-3 can be about five feet each. A drip can be provided at either point 1 or 3, according to the manner of the flow of the condensation.—D. C. H.

Editor Plumber and Steamfitter,—Have had several rusty water fronts to clean out, and, in hammering one to jar rust loose, I cracked it. Can you suggest anything to avoid the hammering?

Take along your plumber's furnace and before doing any hammering on the front heat it up very thoroughly (but slowly). You will find that most of the rust will then jar loose without extra hard hammering. The front should never be hit directly with the hammer. Lay on top of the front a one-inch plank and hammer the plank as hard as you please for you cannot then crack the front. The best way to avoid all rust and deposit is to make use of an apparatus used to prevent such deposits. If you are not

Editor Plumber and Steamfitter,—Will you tell me how many feet of heating surface there are on a piece of two-inch steam pipe 32 feet 1 inch in length?

Editor Plumber and Steamfitter,—The other day I had to caulk a joint in a mean place and didn't want it to leak. Of course, it did, and I had the deuce of a time getting it tight. Can you tell me of any way I could fix things so as not to get caught another time?

Prepare the pipes as usual. After the oakum has been caulked in as carefully as the conditions will permit, shave off quite a lot of your soil pipe cement, spreading it around the pipe within the hub above the oakum. Now pour in the lead and when it has got cool caulk joint. Such a joint ought to hold tighter than the bark to a hickory tree, so to speak. —D. C. H.

The following liquid is recommended by M. Rubini, according to a German patent: 1,000 grammes of weak alcohol (rum) are mixed with 90-120 grammes of oil of cloves and 90-120 grammes of ether; in a separate vessel equal parts (by weight) of paraffin oil and oil of turpentine are mixed; 500 grammes of each of the two solutions are brought together, whereupon a solution of 25-50 grammes table salt in 400-600 grammes of distilled water is added. This liquid must be well shaken until it forms a milky emulsion. It is then ready for use. A piece of cotton wool is wetted with this solution and rubbed over the painting. Fresh pieces of cotton must be used until the tuft remains perfectly clean on going over the painting. If the lacquer should be very old and dark, the surface of the painting may be covered with the liquid and then rubbed off with cotton wool. It will be found that the painting will regain its original fresh and deep colors, the liquid causing no injury whatever.



# Complete Course of Sheet Metal Work

By L. W. KOSER---No. 3

Plate No. 4 illustrates different styles of conductor pipe, eave and roof trough, hip and ridges that can be made in any tinsmith shop. The student should carefully draw these details.

We will first develop a square mitre for a molding similar in shape to Fig. 1, plate 5.

Draw the profile Fig. 1, and number each place where there is a bend or brake, as 1, 2, 3, etc.

Below the profile and an inch or so back of it draw the vertical line N-M. This is for the stretchout or girth of Fig. 1, and is called the stretchout line.

Now transfer the different parts of the profile to this line in the following manner: Set one point of the dividers at 1 and the other point at 2 on the profile,

and with the dividers thus set transfer the space 1 to 2 to the stretchout line N-M and mark 1-2 as shown. Transfer the space 2 to 3 to the stretchout line, also the spaces 3 to 4 and 4 to 5, and number each space on the stretchout line to correspond to the numbers on the profile.

The line N-M then represents the stretchout or girth of the profile, or in other words, it is the width of the metal necessary to form a molding like Fig. 1.

Now draw lines at right angles to the line N-M from each number on it. These are called measurement lines, and are always at right angles to the stretchout line.

To save confusion we will make another

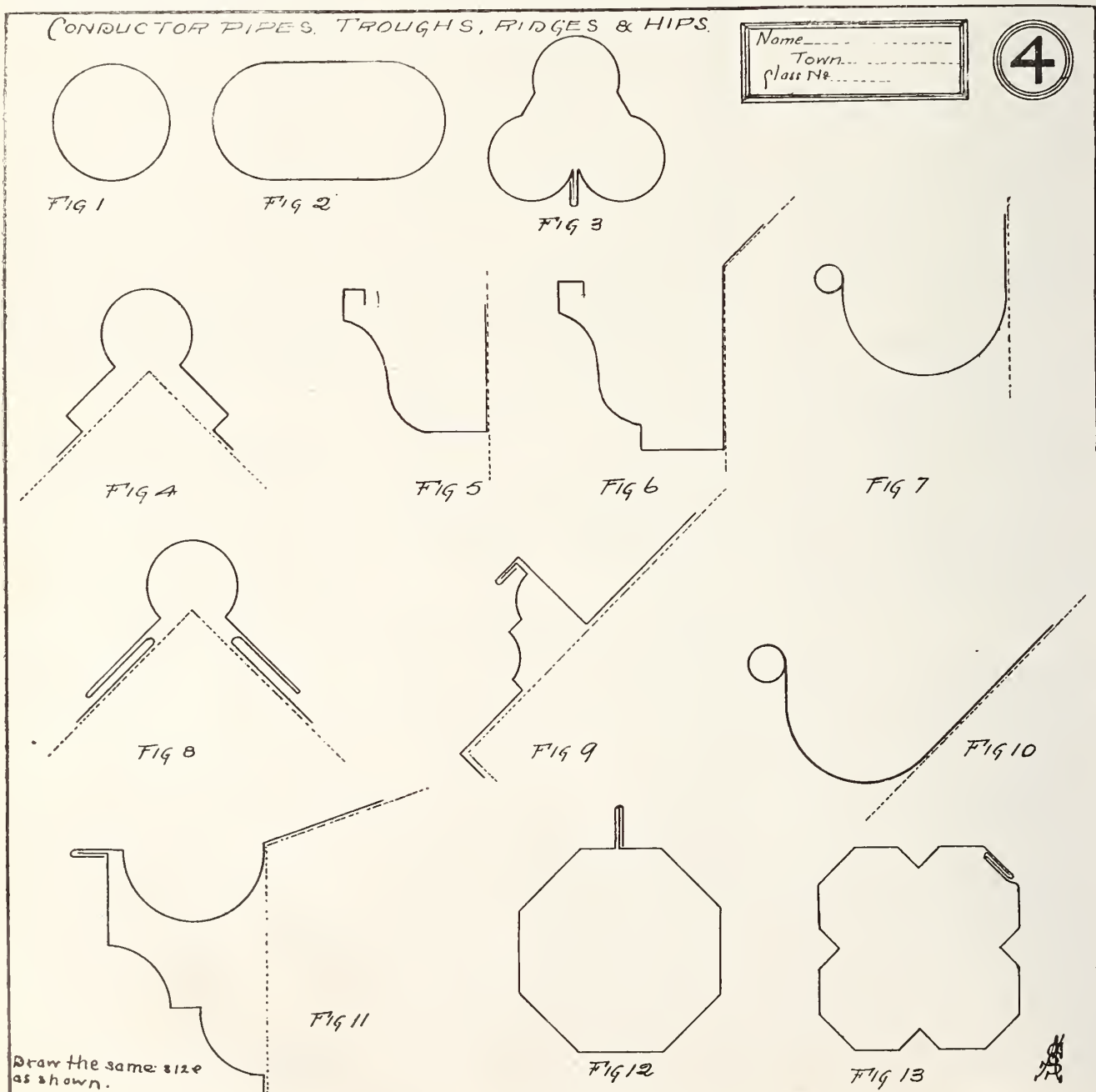
drawing to finish this pattern, but the student can finish it in the one drawing.

It will be noticed that Fig. 3 is the same as Fig. 1 with the addition of more lines.

The line O-P is drawn back of the profile and in line with N-M.

A dotted or light line is carried horizontally from each number on the profile to this line, and marked in some way; for instance, a line is carried from 1 on the profile to the line C-P and is marked A; next a line is carried from 2 and 3 to the line O-P and is marked E. Then a line from 4 and 5 and is marked C.

Now set one point of the dividers at A on the line O-P and the other at 1



on the profile, and transfer this distance to the first measurement line, as 1-A. As the distance from 2 to B is the same as 1 to A, the distance on the No. 2 measurement line will be the same. Now set one point of the dividers at B and the other at 3 and transfer this to the measurement line No. 3. The space 4 to C is the same as 3 to B, so make it the same on the No. 4 measurement line. Now set one point of the dividers at C and the other at 5, and transfer this distance to No. 5 measurement line. Connect the points A, B, E, and C, C, by a line drawn through them and the pattern is developed.

The pattern on the right hand side is for an inside mitre, and the pattern on the left hand side is for an outside mitre.

Cut two outside mitres from paper or metal and form one right and the other left and see that they match together. Also do the same with the inside mitres.

Figs. 5 and 6, problem two shows a patterns developed the same as explained for problem 1, the only difference being in the shape.

Draw Fig. 5. Begin at the top and number the points 1, 2, 3 and 4. Divide the curved part into equal spaces, and number each space. Continue the numbers to the end of the profile.

Lay out the stretchout line N-M and transfer the profile to this line and number to correspond.

Draw the measurement lines from each number.

Draw the back line O-P, and draw a light or dotted line from each number

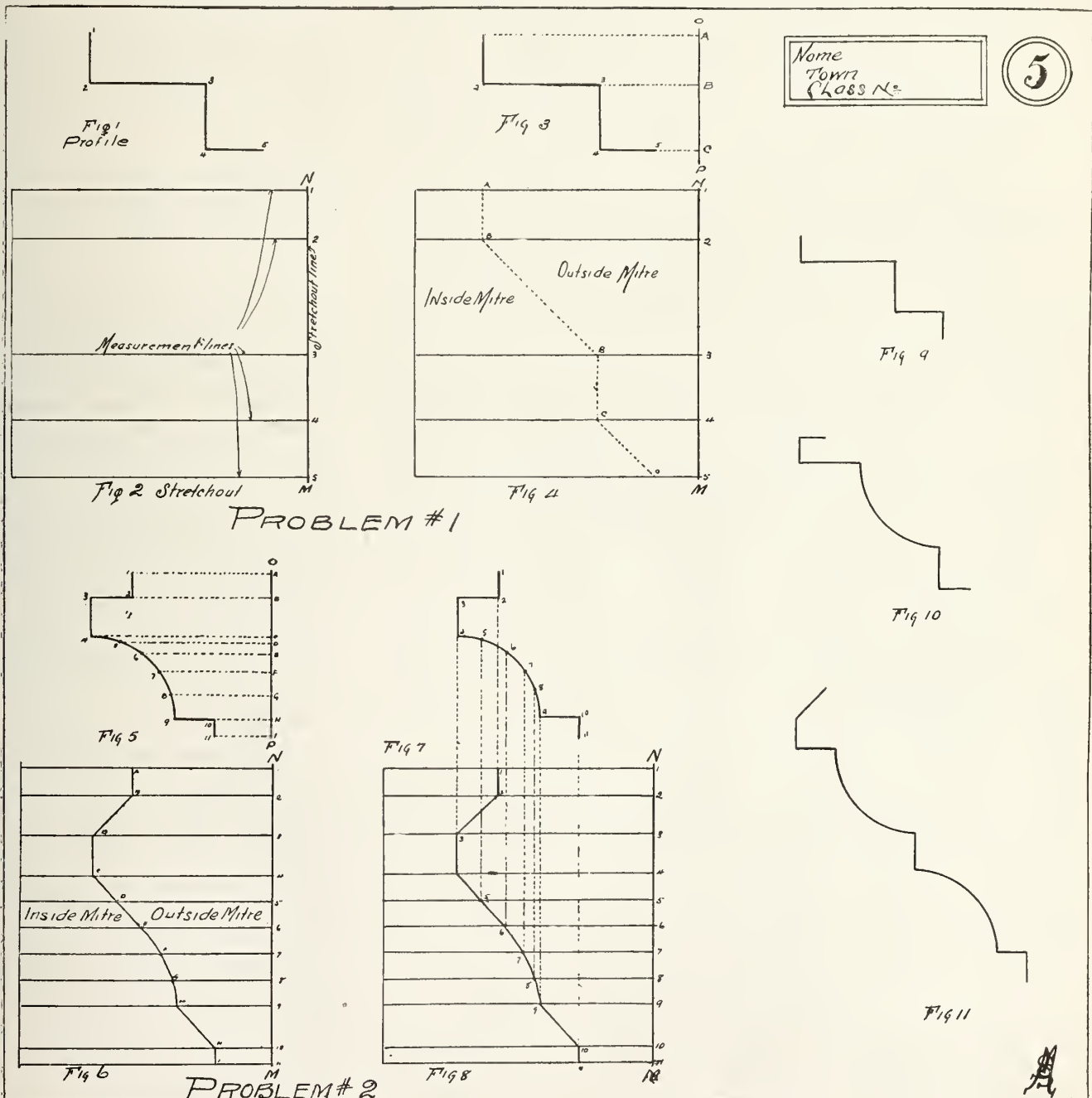
on the profile to this line.

With the dividers transfer the different spaces to the measurement lines having the same numbers.

Connect the different points and the pattern is developed.

Figs. 7 and 8 show the same pattern developed in a different and easier manner. The profile is drawn the same as Fig. 5, and the stretchout the same as Fig. 6, but instead of using the line O-P and the dividers to transfer the spaces to the stretchout line, the T-sqr. is used instead.

This is done in the following manner: Place the T-sqr. parallel to the line N-M and bring it against each number on the profile, and drop a line to the measurement line on the stretchout line having the same number.





# Methods of Sewage Disposal

NO. 4.

By Charles W. Chandler, Toronto.

## Size of Septic Tank.

The discharging or dosing chamber should be made of such size as to hold the liquid sewage which would accumulate in it from twelve to twenty-four hours. In figuring out the size of the tank necessary, the following may be taken as a safe rule, viz., for every occupant of a private house or hotel, allow three cubic feet of space in each compartment, while for a school or factory, where, as in the case of a house, nothing but domestic sewage is to be treated, one-third less space will be sufficient. In any case, the capacity of the septic tank should be at least equal to three-quarters of the daily volume of sewage. If made smaller than this, it becomes rather a mere settling tank; if made too large, causing the sewage to remain too long in the septic tank, too much anaerobic action may take place, which is found to be detrimental to subsequent ozidation.

## Sub-surface Irrigation.

The last stage of sewage treatment aims at the conversion of the dissolved organic matter into innocuous inorganic compounds or elements. This is accomplished either by land treatment or by treatment in artificial filter beds, and the action is largely aerobic, i.e., it is performed by those bacteria which require the presence of abundance of oxygen for their work. The oxidation and nitrification of sewage is, therefore, not a chemical, but essentially a biological process. The form generally adopted in conjunc-

tion with septic tanks is sub-surface irrigation, where the sewage is applied to the soil intermittently by discharging the fluid in periodical doses into a specially-constructed systems of distributing tiles buried in the earth, but laid close to the surface of the ground. (See Fig. 5). The main distributing pipe is of salt-glazed sewer tile, put together with water-tight cemented joints. The branch or lateral distributing pipes are of 4-in. ordinary field drain tiles and are laid with spaces

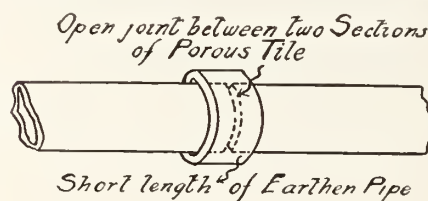


Fig. 6.

of at least  $\frac{1}{4}$ -in. between ends. The field tile should not be placed more than one foot below the surface, and must be perfectly level, for the reason that if given a fall the earth surrounding the low ends of the system would receive more than its share of liquid sewage. The earth surrounding every tile should have an equal amount of work to do, and will then produce the most satisfactory result. The arrangement of these drains is not arbitrary in any way, and they may be laid out so as to conform to the requirements of the land used, both as to contour of the surface and the shape

of the area itself. As a general thing, the main delivers the sewage into a series of parallel branches or laterals, branching from either side of the main. Sometimes simply one long line of loose-laid tile is used without branches. When lateral branches are used they should not be placed closer together than two feet in light soil, and a somewhat greater distance in heavy soil. In every case it is absolutely necessary that there should be a sufficient length and capacity of the field tile to contain and efficiently dispose of the whole of the contents of the discharging chamber of the septic tank. Means should also be employed to cover the open joints of the field tile in such a way that dirt may not enter and fill them. In order that this may be accomplished, and the openings not be closed, pieces of earthen pipe may be used as thimbles. The idea of this will be seen from Fig. 6. The tile should be laid in trenches levelled evenly on the bottom to give the pipe a firm bearing.

Sub-surface irrigation is not affected by frost and can successfully be employed in cold climates and if properly designed and installed will give very satisfactory results. This method of dealing with sewage is not used extensively on a large scale in villages and towns, but is widely applied in the disposal of domestic sewage from isolated houses, hospitals, schools, asylums, country hotels, summer resorts and other institutions, located where there are no sewer systems; thus making it now possible to have in those places all the modern sanitary conveniences of the city, together with an efficient and scientific method of immediately disposing of the objectionable wastes, with the least possible offence to either the senses of sight or smell.

## INTEREST AROUSED.

The articles by Mr. Chandler have aroused wide interest and many letters have been received at the office of Plumber and Steamfitter, commenting favorably on the series or asking questions.

One of the letters received follows:—

Plumber and Steamfitter.—“I would like to ask Mr. Chandler if it is absolutely necessary to have ventilation pipes on the first compartment of the septic tank, as the writer knows of twenty tanks that have absolutely no ventilating pipe and they have been found to syphon from the house traps, when the valve has been out of order in

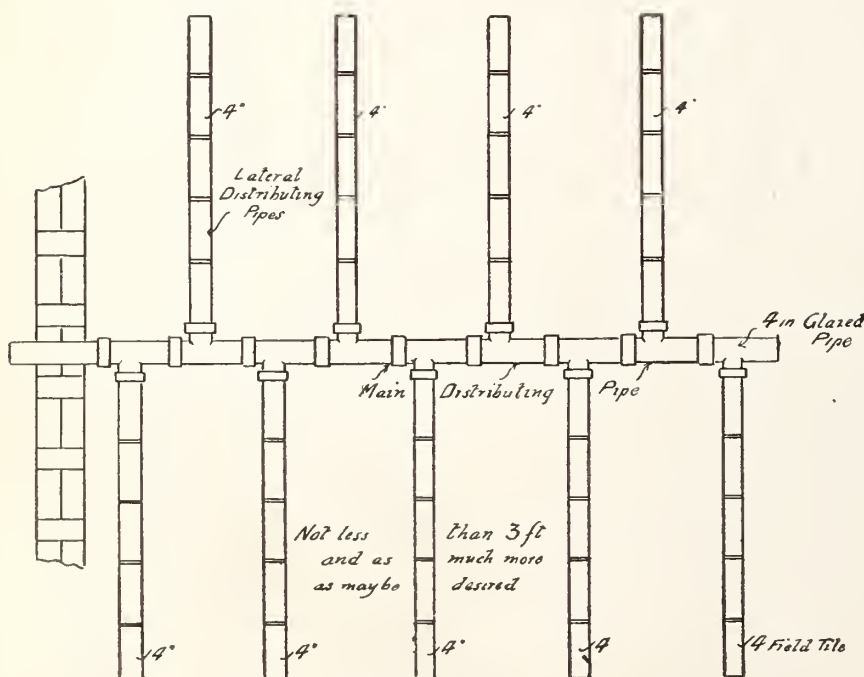


Fig. 5.

the second compartment. I would also be glad to know if running carbolic acid or other disinfecting fluid into the tank destroys the anaerobic bacteria.

Constant Reader.

It is advisable in every case to have a ventilating pipe into all septic tanks. This inlet should be placed in second compartment and a space left at top of division wall to allow a free passage of air into first compartment. No acids or



disinfecting fluids should be admitted into the tank as they certainly destroy the bacterial action. These points are more fully dealt with in the third part of my article "Construction of Septic Tank," appearing in March 1st issue of Plumber and Steamfitter.—Chas. W. Chandler.

## Specifications For Solder

New standard specifications for solder have been submitted to The American Chemical Association by H. J. Skinner, of Arthur D. Little, Inc., acting as chairman of a general committee. In regard to the proposed specifications, Mr. Skinner's report says:

No attempt has been made to cover special solders since their composition is necessarily dependent upon their specific uses and the total amount used is small as compared with the more common types. The requirements for fine solder were formerly and are now in many cases 50 per cent. tin and 50 per cent. lead. Careful service tests carried out by a very large consumer of solder have clearly demonstrated that a solder containing 45 per cent. tin and 55 per cent. lead is entirely efficient for general service, while the cost is materially less.

The composition specified for wiping solder is practically standard among all large users of this material.

As specifications of this nature should be adapted to the needs of the greatest number, an attempt has been made to insert such requirements as would guarantee a satisfactory product, but, at the same time, not needlessly limit the method of manufacture. Copper and zinc have been entirely prohibited, as the former affects the

flowing qualities while the latter produces brittleness. Antimony, however, up to a small percentage, is not detrimental and has not, therefore, been entirely prohibited. The other common impurities are not harmful if present in but small amounts. The requirements, therefore, allow the presence of metals other than lead or tin (excepting copper and zinc) up to 0.5 per cent. It is the opinion of the committee that this will allow the use of old metal of a suitable nature, but will prevent careless manufacture or willful adulteration.

General Description.—The solder desired under these specifications is a homogeneous alloy of lead and tin, uniform in composition, containing no zinc or copper and as free from every other substance as possible.

Rosin flux solder shall consist of a shell of solder in the form of a wire, containing a core of rosin flux. Mineral and other non-resinous fluxes shall not be used.

The quality of the material used and the methods of manufacture shall be such as to insure for the completed solder the properties called for in these specifications.

Requirements.—1. The composition of the various solders supplied under these specifications shall be as follows:

Quality of solder.	Minimum Per cent. of tin	Per cent. of lead.	Maximum Per cent. of metallic im- purities other than copper and zinc.
Fine solder (bar solder) .....	45	About 55	0.5
Wire solder .....	45	" 55	0.5
Rosin flux wire solder .....	45	" 55	0.5
Wiping solder .....	40	" 60	0.5

2. The rosin core used in rosin flux wire solder shall be of commercially pure rosin and shall form not more than six per cent. nor less than three per cent. of the total weight of the finished product.

Inspection.—Each shipment shall be inspected and weighed. Drillings taken from any portion of each lot of solder shall be analyzed and the results of the analysis shall be considered to represent the composition of the lot.

Analyses shall be made in accordance with the standard method attached to and hereby made a part of these specifications.

Method of Shipment.—The completed solder shall be furnished in such form and weight and with such marks as may be specified.

Failure to Meet Requirements.—Any shipment which fails to meet the requirements hereinabove specified may be rejected and returned, the contractor paying freight charges both ways.

## Market Report TORONTO.

Toronto, March 14.—Conditions are reported to be much brisker. Orders are coming in with more regularity and the supply houses have been making larger shipments than usual at this season of the year.

Enamelware.—The demand has grown to springlike proportions and enquiries are becoming much more frequent. No price changes have been made.

Boilers and Radiators.—Considerable work is being done in the heating line and orders are placed for boilers and rods. There is every evidence of a rushing trade this year in the heating line. Building operations are reported to be brisk in all parts of the country. If reports emanating from all sections are to be believed, building operations will be in excess of 1911 and there will be a corresponding activity in the heating trade.

Soil pipe.—There is a good demand for most sizes. Quotations on medium and heavy soil pipe are: 70 and 10. On the 7 and 8-inch sizes, the discount stands at 50 per cent.

Iron Pipe and Fittings.—Galvanized pipe, 1-inch size is quoted at \$6.02 and 1-inch black pipe at \$4.37. Other quotations remain the same as follows: Cast

iron fittings, 65 to 70 per cent.; malleable fittings, 37½ to 40 per cent.; cast iron bushings, 70; malleable, 67½; nipples, 75 and 10; headers, 60 and 10, although some quote 67½ and 70; flanged unions, 70; malleable-lipped unions, 67½ per cent.

Lead Pipe.—Lead pipe sells at 7 cents a pound, and lead waste at 9 cents, with 25 per cent. off. Caulking is quoted at 4½ cents. The discount on traps and bends is 45 per cent.

Solder.—There is a good demand for this season of the year. Wiping is quoted at 22 cents and half-and-half at 26 cents.

Metals.—One of the main topics of conversation in metal circles at the present time is the imminence of the strike in the Old Country. Metal men are agreed that the situation presents many dangerous features but they are not showing any evidences of alarm. "It is too early to form any opinion," said one man. "I hardly think that we need apprehend any serious danger."



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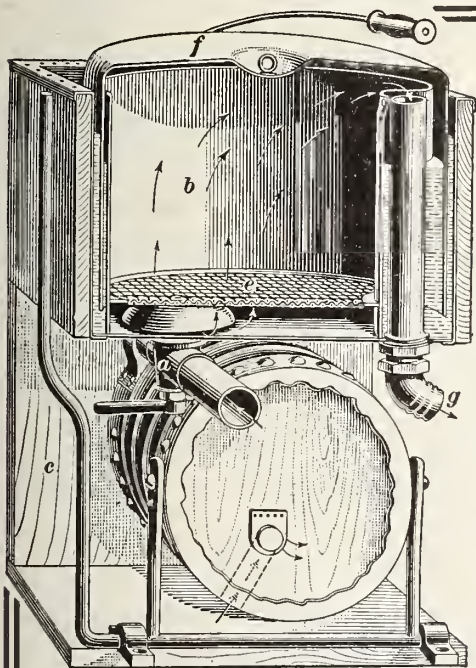
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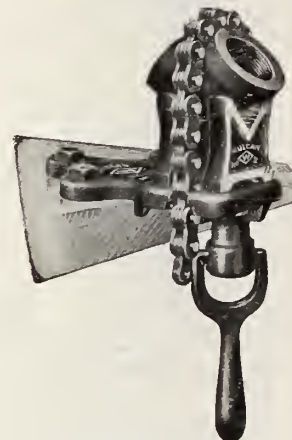
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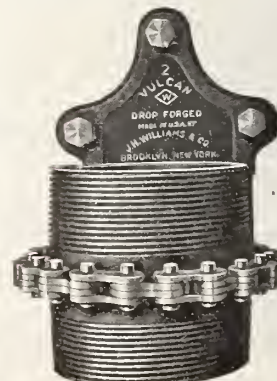
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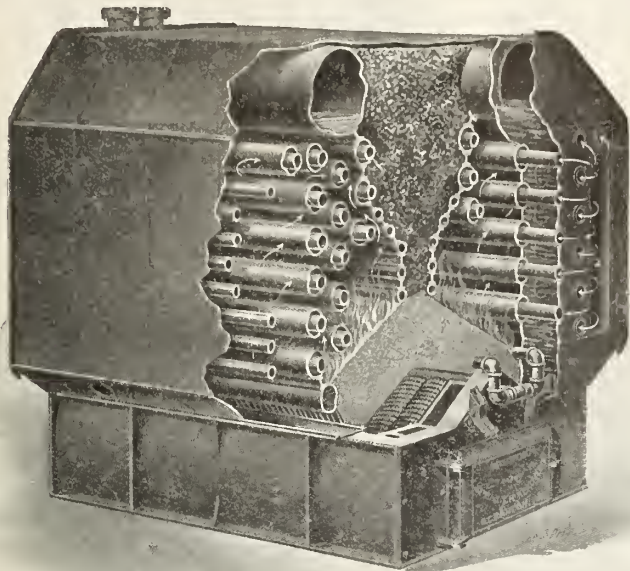
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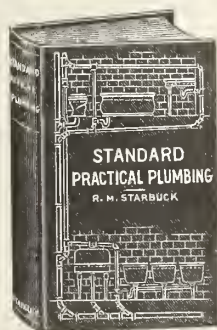
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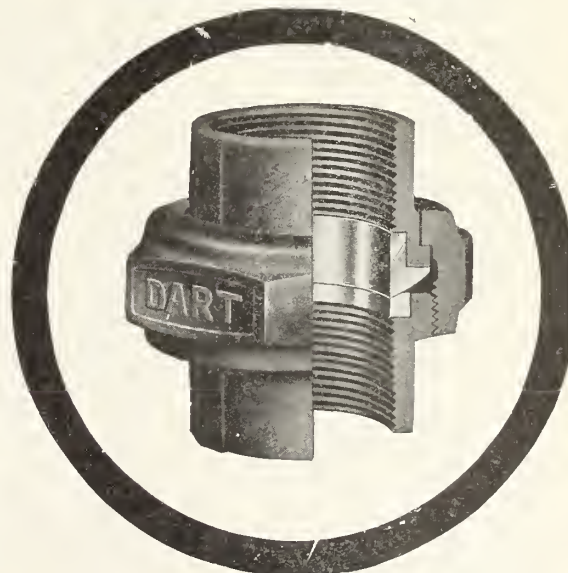
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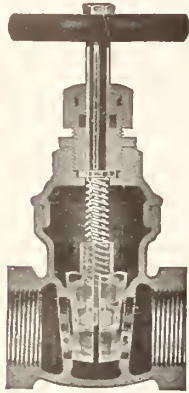
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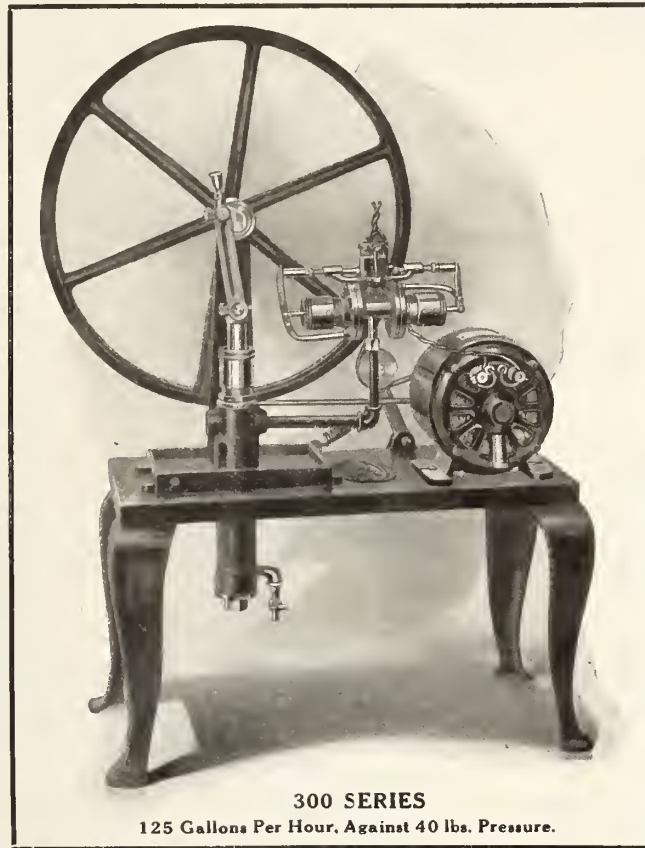
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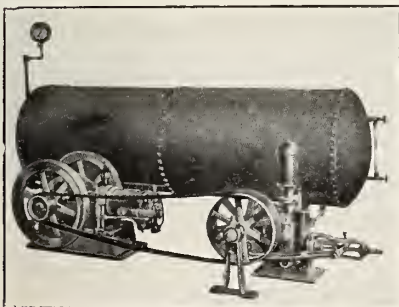
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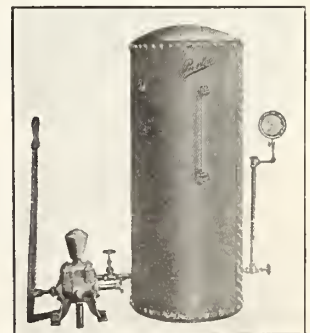
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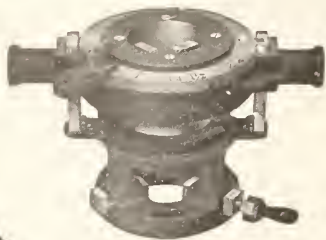
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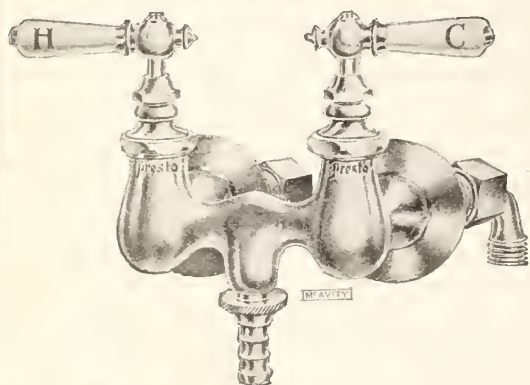
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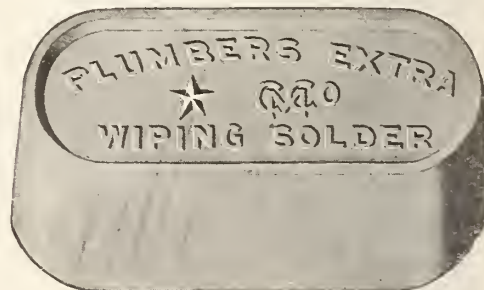
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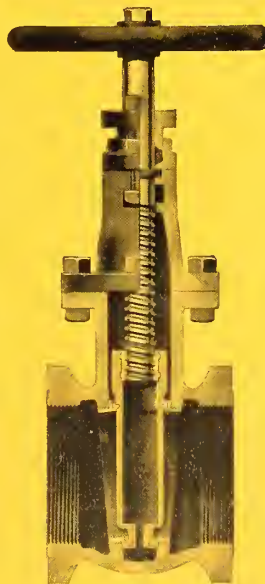
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No. 7

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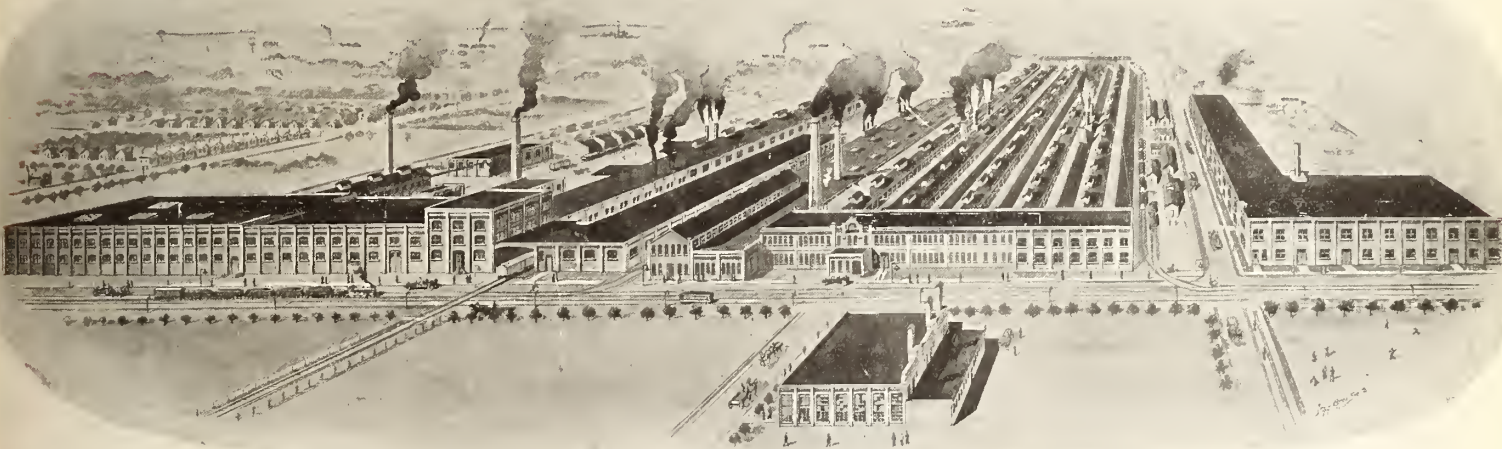
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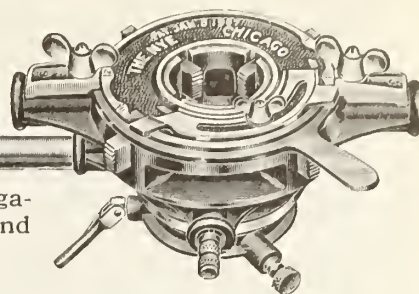
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### Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

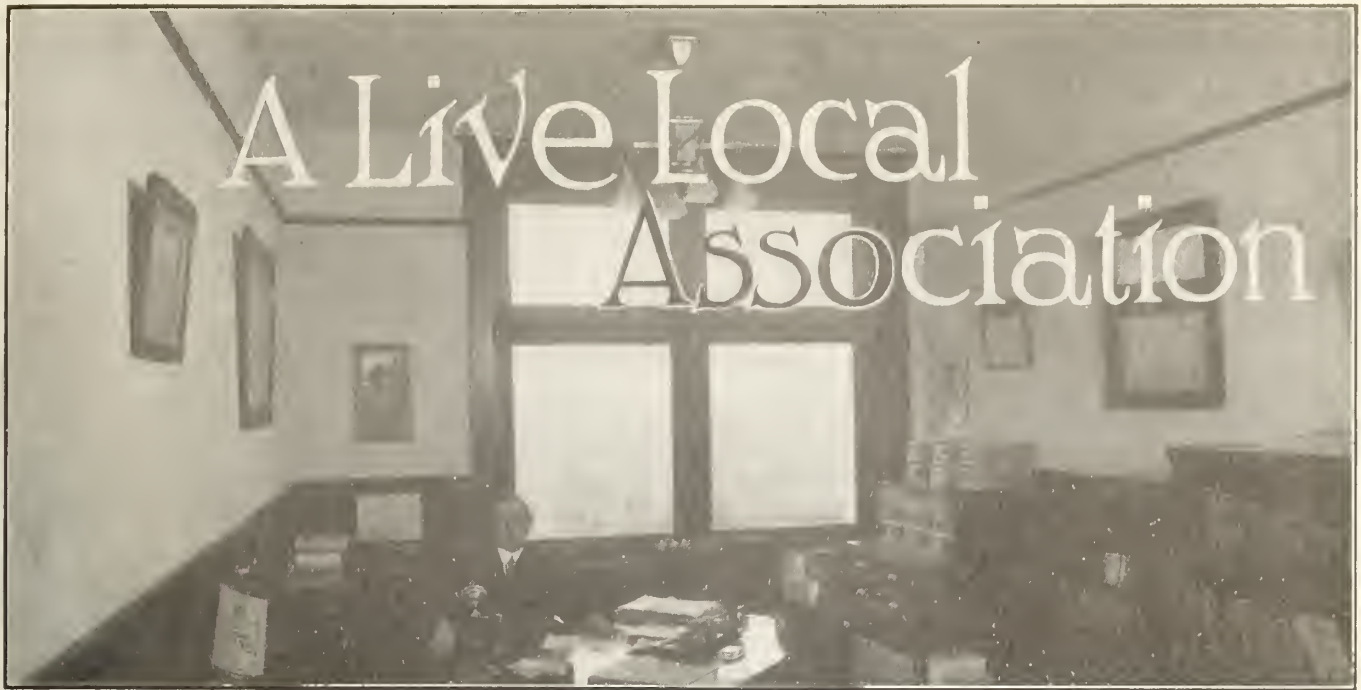
In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

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The Office of the Secretary of the Calgary Association of Sanitary and Heating Engineers.

**The Calgary Association Has Accomplished Splendid Work—A Stiff Examination Must be Passed by Masters and Journeyman Alike—The Potency of Local Associations.**

IT is conceded that association work begins with the local. If the local associations are not active, there is little possibility of the national and provincial bodies achieving a lasting success.

The object of association work is to get the members of the trade together for the widening of their knowledge and the improvement of trade conditions. In national and provincial associations they come together at certain intervals and undoubtedly a great deal of good is done. Matters pertaining to the general welfare of the trade are attended to. It is apparent, however, that the local association which brings the members together regularly is the greatest power for good. In places where there are live local associations, trade conditions are always found on a high scale. Better work is done, better profits are made; everyone benefits, the public as well as the plumber. On the other hand, in places where there are no associations and where distrust and ruinous competition are found, the conditions are always bad. The price paid is lower than consistent with good work and the quality of the work is often as a direct result very unsatisfactory.

The past few years have seen a distinct advance in respect to the organization of local association. A number of cities are now well organized and among these Calgary stands out prominently. It is fitting that, as the city which can boast of having one of the best local associations, if not the best,

in the country, Calgary should have been selected as the scene of the coming national convention.

The Calgary association includes in its membership practically every master in the city. It has, therefore, the strength required to keep down the evil tendencies noted in other places where that strength is lacking.

It is probably true that the Calgary association owes its continued strength to the fact that a permanent secretary has been engaged for the past few years in handling the affairs of the association. F. N. McVeigh, who holds that position, is an aggressive official. He is a young man and combines a practical knowledge of the trade with considerable

secretarial skill and a gift for letters. He is a live publicity agent among other things. Mr. McVeigh keeps things humming in association matters and is undoubtedly a factor in keeping the interest of the members up.

The association has permanent quarters, as shown in the accompanying illustrations. Regular meetings are held and the social features are kept up. An annual banquet is held and a big picnic is held each year in conjunction usually with the Edmonton association.

#### **What Has Been Done.**

The results of this consistent organization work are seen in many ways. The Calgary by-law is in some respects a model one. It provides for a good



The Association Headquarters—The Room Where the Meetings are Held.



license fee and makes it incumbent that masters and journeymen alike pass a stiff examination.

The result is that the trade harbors none but competent men in Calgary, and

he said, both in Canada and the old country in building, and he could say, with all truth that the class of work done by the members of the Calgary Association of Sanitary and Heating



Picture Taken at Second Annual Banquet of the Calgary Association.

the quality of the work done is exceptionally high. A striking tribute to the quality of the work was paid by a Calgary architect at the last annual banquet, E. N. Butler, of the firm of Hodgson, Bates & Butler. He had had a very large and comprehensive experience,

Engineers was of a much higher quality than that done in most other places and and certainly was inferior to none.

What more striking tribute could be paid to the good results of trade organizations?

## Want Date of Convention Fixed

**Provincial Vice-Presidents Think a Regular Time for the Annual Gathering Should be Decided Upon—Propose the Second Week in June—This and Other Important Changes Likely to be Made in the Society's Constitution.**

Montreal, March 15.—Recently the revised Constitution of the Canadian Society of Sanitary and Heating Engineers, upon which the sub-executive has been working for weeks past, has been sent out to all the provincial vice-presidents. This is to give the officials in all parts of the Dominion an opportunity to suggest further improvements. The suggestions are coming in too, and it seems likely that several rather important changes will be made before the constitution is ready for presentation at the Calgary convention.

### Delegation from Toronto.

Last week a delegation came to Montreal from the Ontario Association. Wm. Mansell and Lewis Legrow, who were on this, expressed satisfaction with the alterations in the old constitution which the sub-executive had made. They had a few further alterations to propose, however, and since these changes were much the same as those suggested from other parts of the Dominion, it seems exceedingly likely that they will be adopted.

All the proposals cannot be outlined here, but one or two of the most striking

may well be brought to the attention of those interested in the society.

### The Time of Meeting.

Perhaps the most important proposal is that which deals with the place and time of the annual convention. From a number of provinces it has been suggested that the date of meeting be fixed; and the time most favored is the second week in June. This, it is urged, is not a rush season with the sanitary and heating engineers, and a gathering then would be well attended. Moreover, it would not interfere with other holidays. At present, the members state that this trip to the convention is necessarily taking the place of their summer holiday. They do not altogether like this for it means they take their trip to some place decided upon by others, and not selected as the result of their own fancy. The convention city, by the way, it is generally conceded, should be selected at the convention; in other words, that at Calgary this July the delegates should decide where they will convene next June.

### The Question of Votes.

In the revised constitution as sent out by the sub-executive, it was proposed that the delegates from the various associations should have one vote for every ten members belonging to the association. The opinion seems to be that a change might well be made here. This system, it is argued, might hardly give the delegates from new associations enough influence, and it is proposed that representatives shall have a vote for every five members of their local association.

In the revised constitution as it now stands, there is a clause which requires that all proposed alterations to the constitution shall be made in writing thirty days before the convention. Some feel this would require too great a rush this year, so it is likely that freedom will be allowed to suggest amendments without any notice.

In a few weeks now the sub-executive will meet again and will then draw up a final draft of the constitution. In this will be embodied such of the suggestions as may be deemed in the best interests of the society.

### SASKATOON ASSOCIATION FORMED.

Saskatoon, Sask., March 15.—A meeting of the master plumbers of Saskatoon was held on the evening of March 12, when a local association was formed. A partial organization was effected in 1911 but the association was not then put on a perfectly satisfactory footing, and it was to complete the work begun last year that the meeting was called.

Those on hand were Messrs. McLean, McAdams, Elford, Cornish, Brandon, Errond, Tillock and Watts.

A motion to form the Saskatoon Association of Sanitary and Heating Engineers was carried unanimously and the following officers were elected:—

President.—D. A. Roos.

Vice-President.—Frank Cornish.

Secretary.—W. ("Billy") Watts.

Treasurer.—Harry Elford.

Executive Committee.—Messrs. W. McAdam, Jack Tullock and McLean.

Entertainment Committee.—Messrs. Harry Elford, J. Tullock, W. Watts and Errond.

### To Hold Banquet.

It was decided to celebrate the successful formation of the association by holding a banquet. The matter was left in the hands of the entertainment committee but it was agreed that the event was to be made second to none. Harry Potts of Regina, the Saskatchewan vice-president of the Canadian Society of Sanitary and Heating Engineers, will be the guest of honor. Mr. Potts has been invited to visit here and help to put the newly-formed associa-



tion on a good footing for the ensuing year.

#### Going to Calgary.

It was decided to affiliate with the national body and a strong delegation will be sent to the convention at Calgary. Saskatoon was well represented at the Twin Cities in 1911, but Calgary will see a still larger and more enthusiastic delegation. In fact, the

whole fraternity may move down to the Prairie City for convention week.

#### Conditions are Good.

The prospects point to a brisk year in Saskatoon. The class of work is gradually improving. Many large buildings are to be put up during the coming year and this means an active time ahead in practically all trades.

got into line before any action is taken in relation to the provincial body. It seems likely this advice will be acted upon.

## A Record Attendance is Expected

**The Ontario Convention on Good Friday Will be Largely Attended—Important Business to be Transacted—Campaign for Uniform Regulations Will be Started.**

TORONTO, March 28.—The annual convention of the Ontario Society of Domestic Sanitary and Heating Engineers will be held here on Good Friday. From all indications, it will be the largest ever held in this province. The officers are counting upon an attendance made up of representatives from every part of the province.

The convention will open at 10 o'clock sharp in the Temple Building, corner of Bay and Richmond Streets. At twelve an adjournment will be made to the Baltimore Lunch on York Street, where lunch will be served. At 1.30 the afternoon session will begin, and an effort will be made to finish up the work at that sitting.

Secretary Frankland states that he has received letters from practically every part of the province, assuring him that delegates will be on hand. Among the places to be represented are London, Guelph, St. Thomas, Renfrew, Brockville, Berlin, Galt, Preston, Paris, Collingwood, Smith's Falls, North Bay, Brantford, Stratford, Hamilton, Niagara Falls and Burlington. Representatives will also be on hand for other sections from which reports have not been received.

Jack Marshall will be down from Port Arthur, and Ed. Higginbottom from Fort William. They will bring assurances of support from the strong local associations in the Twin Cities.

J. E. Farrell is expected from North Bay, Harry Mahoney will be down with a strong Guelph contingent, Hamilton will probably be well represented, and nothing could keep J. A. Caslake, of Collingwood, away. Ottawa has not been heard from. What's the matter in the Capital?

#### The Business Ahead.

The convention will be a red letter one in other respects. A great amount of important business is to be transacted, the details of which have already appeared in Plumber and Steamfitter. The question of examination forms for membership is to be settled. Certificates will be issued to all members in good standing. A campaign for uniform provincial plumbing regulations will be launched.

It is also hinted that the question of a provincial organizer may come up. This will depend, however, on the size of the attendance.

## New Brunswick Men Talk Of Forming Provincial Body

Moncton, New Brunswick, is the last place to form a Master Plumbers' Association, and the members there are so enthusiastic that they are already considering the advisability of broadening out, forming a New Brunswick provincial association.

#### This Will Come, Too.

William Watson is President of the Moncton Association with L. H. Estand Secretary-treasurer. The latter official

was instructed to write John Watson, Secretary of the Canadian Society, asking him what he thought of the provincial association idea. Believing that it is sometimes wise to make haste slowly, Mr. Watson advised that no immediate steps to that end be taken. At present there are locals in St. John and Moncton, while Fredericton seems ready for one. Mr. Watson suggested that the master plumbers of this last place should be

## OPERATING PRESSURE OF CAST IRON BOILERS.

Editor Plumber and Steamfitter.—Can you tell me anything about the amount of pressure that the common house heating boiler is supposed to be operated at? "Boilers."

They are generally supposed to be operated at not to exceed ten pounds. As we look at it this is not because the boiler is not capable of standing more pressure (for they are supposed to be tested to several times this pressure before leaving the factory) but because it would not be economical to operate the plant at even ten pounds pressure. Our observation has been that there are more low-pressure jobs operating at less than five pounds than there are at from five to ten pounds. In an ordinary house the pressure is, many times, even less than one pound.—D. C. H.

## GAS USED BY A "SIMMERING BURNER."

Editor Plumber and Steamfitter.—Can you tell me something of the amount of gas that is used by a simmering burner on a gas stove?

"Customer."

This simmering burner is generally found to-day in all good gas stoves and is generally placed within some other burner. It usually will consume anywhere from two to five feet of gas per hour which means quite a saving of gas to the consumer in the long run.

D. C. H.

## INSULATED PIPES IN GROUND.

Editor Plumber and Steamfitter.—Where buried steam pipes are properly insulated, say with a covering of hollow wooden pipes, can you tell me the percentage of heat lost?

"Insulation."

After some searching we find it stated that the percentage of heat lost per mile with the pipe delivering steam to its full capacity to be from one-fourth of one per cent. to six per cent.—D.C.H.

## MAKING PAINT STICK.

Editor Plumber and Steamfitter.—I tried to paint over some galvanized iron the other day and the paint would not stay on. How can I make it do so?

S. R. Bender.

Clean the galvanized iron thoroughly with a fairly strong solution of ammonia and water. After the galvanized iron is entirely dry the paint may be applied and it should stick.—D. C. H.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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TORONTO, APRIL 1, 1912

IN THE COURSE of an address before the Toronto Association of Domestic Sanitary and Heating Engineers by Mr. Milliken, a well-known Toronto lawyer, some good points were made with reference to the drawing of contracts. It was demonstrated that the

### THE DRAWING OF CONTRACTS.

He then has it before him continually for reference and guidance in carrying out the work. Before signing, it is important that each clause should be thoroughly understood. It is unfortunately a common occurrence in the trade for men to sign contracts the terms of which they have made no attempt to master. It frequently happens that the plumber has really no conception of what his contract provides for in the matter of penalty clauses and extras. And it just as frequently happens that he encounters trouble before settling up. Cases have been known where contracts have been signed which provided for the payment of extras only where estimates and signed orders had been received. Having forgotten or carelessly passed over this clause, the plumber has gone ahead with work on verbal instructions only; and found afterward that he could not collect.

These are matters which every member of the trade should consider carefully. Contracts should be thoroughly understood before entered into and, once entered into, they should be carried out strictly to the letter. This can be done only by securing signed copies for guidance.

AS AN ACCOMPANYING factor in the persistent endeavors for more scientific methods of heating and ventilation, says the Metal Worker, comes the suggestion that the installation and operation of all equipment for such purposes in private as well as

### INSPECTION OF HEATING.

public buildings be placed under municipal supervision and regulation. This suggestion has already taken concrete form in Chicago, where an ordinance has been passed by the City Council creating a ventilation inspection bureau. The necessary appropriations have been included in the annual budget to defray the expenses in connection therewith, and in the near future examinations are to be held with a view to selecting the chief of the bureau and his assistants. The activities of this bureau, it is understood are to be confined to ventilation problems, but, of course, these cannot be wholly disassociated from those of heating. In New York State the factory inspector of the near future will probably have considerably increased jurisdiction over the heating and ventilation of all buildings classed as factories. With these advances being accomplished one may well wonder if the day is not near at hand when the heating inspector will be as much in evidence as the present-day plumbing inspector. It is

presumed the duties of the heating and plumbing inspector would include making tests to determine the efficiency of the heating system as a heat producer and to pass on the quality of the air and the absence of coal or other harmful gases in the rooms. As far as the editors of this journal know, there is no city in this country which, prior to the ordinance in Chicago, has instituted regulations governing the installation and operation of either heating or ventilating equipment, and employs an inspector especially to see that these regulations are observed. Practically every city, on the other hand, has its plumbing inspection bureau, its fire inspection bureau and its board of health. The question that naturally follows is: Why not a heating and ventilating inspection bureau? Judging the suggestion from the humanitarian side one is led to commend the idea of municipal regulation of heating and ventilation, and viewing it from the commercial standpoint one is led to believe that good business principles should encourage such laws, inspections and tests as a means of improving the efficiency of such systems.

THE IMPORTANCE of the local association is being recognized on all hands. In a number of provinces, the leaders of the association movement are devoting their efforts to build up locals before proceeding with the organization of provincial associations.

**BUILDING UP THE LOCALS.** This is the logical way to go about it. Local Associations are the foundation on which the provincial is built. Without a good foundation, the provincial association cannot continue permanently.

IT IS GRATIFYING to note the rapid progress being made in association matters in all parts of the country. It is expected that the Ontario convention on Good Friday will be the most successful ever held in that province.

**RAPID PROGRESS BEING MADE.** Word comes that the New Brunswick men are talking of falling in line. In Saskatoon a local association has been organized on a basis which promises permanency and in other parts of that province the work of starting locals is being successfully carried on.

It is quite evident that the idea has taken hold. If the work is kept up with the vim that is being shown at present, it will not be long before the organization of each province will have been made complete.

Considerable progress has been made since the last national convention. The Calgary gathering will be confronted with the task of furthering the movement and making arrangements to carry it on systematically.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

THIS is the off season with John Watson, of Montreal. It is a season when he has absolutely nothing to do but work. John Watson—as everyone who knows him knows—is an enthusiast. He enthuses over association work, and he enthuses over curling and baseball. He enthuses over fishing—even when the fish don't bite—which is probably frequently, despite the stories Mr. Watson tells. But none of these sports are in season now. Curling is over. The irons have been practically laid aside, and the shout of "Weel played, sir," is heard at less frequent intervals. Baseball on the other hand, has not well started; and the season for fishing is not yet opened.

"But the curious will inquire, 'how does John Watson curl, play and watch baseball, and fish, and at the same time keep up his business?'"

It is a question, and when it was put squarely to him, Mr. Watson remarked, "If business interferes with your curling give up your business." He said this with one of the chuckles for which he is famous, gentle reader, and the remark must not be taken too seriously.

No, John Watson finds time for curling, for baseball and for fishing. He finds time to do his work as secretary of the Canadian Society of Sanitary and Heating Engineers. He fairly gives himself to this work, yet he keeps his business going too. "Keeps it going," is hardly the right term—he makes it go.

At the present time Mr. Watson is just making some changes in his business—changes which he believes will do much to increase his sales. He has secured the store to one side of his old stand. He has had this remodelled, and in it he is displaying gas ranges—a new line for him. The addition is connected with the old part of the store. The whole front of the establishment is given over to a show window, and in this gas ranges, baths, and bath room fixtures are being shown.

Nor are these innovations to be the last. For some time Mr. Watson has been handling instantaneous heaters. Now he is about to add vacuum cleaners. He holds that this line will appeal to the same people who are attracted by the good stove, and he expects to yield him a good profit.

Mr. Watson was born in Montreal—how long ago doesn't much matter, but it must have been somewhere in the late fifties or early sixties. He learned his business here, and then strayed away to Toronto. Mr. Watson says



This is the off season with John Watson  
—He has absolutely nothing to do but work.

it took him nine years to repent—but he did repent and came back to Montreal. Here, about twenty-five years ago, he started business on Dorchester street, the firm being McCrea & Watson. In 1890 they opened a Westmount branch. Then there was not enough work there to keep one man going. Ten years ago, however, when the firm of McCrea & Watson dissolved partnership, Mr. Watson took up the Westmount business, and to-day he is employing a number of journeymen to do his work.

At the moment there is little happening in the sports which he so dearly loves, so Mr. Watson has to satisfy himself with working for himself and the association. He is looking forward to July and Calgary. Watch for him when the baseball game is in progress.

## A Fenian Raid Veteran.

Peterboro, Ont.—Among the Fenian Raid veterans here who will receive \$100 each from Government is Peter Thompson, city plumbing inspector.

## New Plumbing Firms.

Regina, Sask.—W. A. Thorne has started in the plumbing and heating business here.

Weyburn, Sask.—The Scott Co. have started here in sanitary and heating work.

## Partnership Dissolved.

Vancouver.—McArthur and Collie, plumbers, have dissolved partnership.

## Firm Burned Out.

Calgary, Alta.—What might have been a serious blaze took place on Friday night in the old Cushing building on First street west, when the same caught fire presumably from some carelessness around the automobile garage that occupied part of the building.

As it was, the stock and fixtures of the different firms having offices and warehouses in the block were almost totally destroyed, among these being the plumbing stock of Messrs. Burnett & Weir, sanitary and heating engineers.

While the actual loss will not be heavy on these gentlemen, as they were well covered by insurance, still a fire of this description always affects business to a large extent for some time to come.

The two horses of this firm which were stabled in the building were not got out in time and were so badly burned that they had to be shot the following morning to relieve their sufferings.

Messrs. Burnett & Weir are fitting up premises on 14th Avenue, but until same are ready are utilizing the Association rooms, 27-28 Mackie Block, for an office.

Association membership always works out to the benefit of the members in almost any crisis, and this firm's business has not suffered to any great extent through their being able to get in touch with their customers from their temporary offices at once.

## President Walsh Injured.

Montreal, March 16.—When returning from the station last Sunday, where he had been to say good-bye to a delegation from the Ontario Association, James Walsh, President of the Canadian Society of Sanitary and Heating engineers met with a nasty accident. Getting off a street car he slipped and dislocated his shoulder. The injury will keep him in his home for some little time.

The accident, coming at this time, when preparations for the gathering at Calgary next July are being pushed along so rapidly, is serious to more than Mr. Walsh. His friends the Dominion over will be sorry to hear of his misfortune, and all will hope that the injury will not keep him inactive long. He is needed at the executive meetings.

At present Mr. Walsh's arm is in a plaster cast, and it will have to be kept there for some time. The doctors hope, however, that he will be able to use the member in a month or so.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## RADIATOR LEGS LIFT OFF FLOOR.

Editor Plumber and Steamfitter.—In the second and third floors of a building the ends of the radiator nearest the supply steam valve in the second and third storey of the building lift off the floor half an inch or more when the steam is on. Can you suggest any remedy?

J. P. Rodgers.

Probably the steam fitter when he ran the riser line failed to make any allowance for the expansion that would naturally occur. Undoubtedly the lines are connected up somewhat after the manner shown in drawing number 1. One can see that there is no swing possible at the joints, hence any increase in length of the steam riser line would carry the steam valve along with it, hence the end of the radiator would also follow.

If the fitter had used two short nipples and two "els" after the fashion shown at points "4, 5 and 6" in drawing number 2, there would have been a "swing" at each of these points and consequently

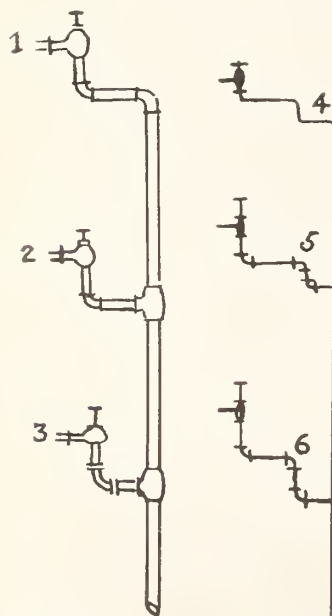


Figure 1.

Figure 2.

the expansion would, so to speak, have "got by" and the radiator legs have remained upon the floor where they rightly belonged.—D. C. H.

## MAKING UP OLD RADIATION.

Editor Plumber and Steamfitter.—I have not had very good success in repacking the loops, or rather, the push nipple connections on some radiation in a building where some repairs are neces-



Figure 3.



Figure 4.

sary. Will you be kind enough to tell me how this can be done and have any fair chance for success?

John Horton.

In rebuilt push nipple radiation it is the safer plan to use some kind of packing. In drawing number 3 the loops are shown far apart (points 1, 2, 3 and 4). Now if these loops were made home in unpacked nipples there might be a leak and then there might not, wholly according to the tightness with which the nipples chance to fit. When drawn up they would, perhaps, fit as shown at point "A" in drawing number 4. Now, if before tightening some asbestos wicking, slightly oiled, he wound around the nipples and the loops then tightened, it will be found that the leaks are few and far between. The writer has packed many loops on radiators after this fashion and seldom had a leak when the work was done with any degree of care at all.—D. C. H.

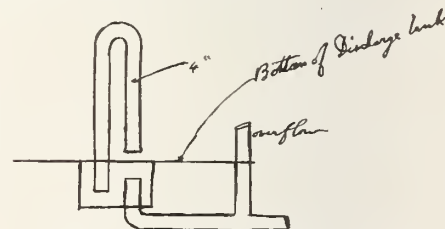
## CONNECTING WATER COLUMN.

Editor Plumber and Steamfitter.—I notice that you state, in answer to Pet-

er Gray's query in March 1st publication, that a water column connected top of dome and bottom of fire pot will not give a correct water line. Can you give me a reason for this. I have had a rather unique example of this during the last week. I have a steam boiler with a three-inch pipe connected from main at top of boiler to bottom of fire pot. Now the water line in this should be the same as that in boiler to do what it was intended for, instead of which the line in the tube is seven inches below that in the boiler, and I can't figure out the reason. It was first connected 3 inches from main to half way down boiler and from there 1½ inches into fire-pot. In this case the water went completely out of the large tube. Hoping you can give me some information.

"Steamfitter."

In the case where the column was connected three inches and then bushed to 1½, the top pressure would force the water out of sight. If "Steamfitter" will connect his water column from its bottom into one side of boiler, say from six to ten inches below the natural water line, the water will stay in and be at the approximate right level when the steam is carried. Top and bottom openings of water column should be the same in size.—D.C.H.



## SIZE OF CONNECTING PIPE.

Editor Plumber and Steamfitter.—How large should the pipe be that furnishes the gas to an ordinary gas stove? J. A. C.

It depends upon the number of burners and distance the gas pipe is carried from main. If more than twenty feet, ¾-inch pipe should be used. Also ranges if more than four holes should be supplied with pipe at least ¾-inch size. Half-inch pipe may be run in other cases if desired.—D. C. H.

# Methods of Sewage Disposal

By Charles W. Chandler, Toronto.

In a series of previous articles on the biological disposal of crude domestic sewage, examples were given of the application of this principle to isolated building and dwellings, in which it was demonstrated that the improper disposal upon the land of fouled water from human habitations, was not only a menace to health, but an abuse of nature's gifts. The writer now proposes to deal with the question of the disposal of sewage refuse from towns and villages by means of larger septic tanks and contact beds whereby a harmless effluent would be discharged into lakes, rivers and streams, thus preventing the widespread pollution of the greatest of nature's gifts, which at present generally prevails throughout the country.

In 1884, when the almost universal method of treating crude sewage was by precipitation, the question of fermentation in connection with the disposal of sewage began to engage the attention of the sanitary authorities in England, and in that year the report of the Royal Commission on Metropolitan Sewage Discharge, contains the following suggestive sentence.

"There are two chief methods by which effete organic materials, such as excreta, are got rid of, namely, by fermentation and oxidation. Nature, in this climate at all events, utilises both these processes, and in the above order. The organic molecules of effete matters are first split up by fermentation (and putrefaction is one kind of fermentation) into less complex substances often of an offensive character, and these are subsequently oxidized into inodorous inorganic substances. The agents by which these fermentations are brought about are those microscopic organisms known as bacteria, which either themselves set up fermentation or excrete substances which act as ferments. Bacteria or their spores are present everywhere, and, gaining access to sewage, set up fermentation. But they require time for their propagation and the setting up of their resultant fermentation."

## The Researches of Pasteur.

About this time M. Pasteur made extensive experiments along these lines, and succeeded in separating two of the most useful forms of bacteria, namely,

\*Fermentation by Dr. Duclause, Clowes & Sen, 1834.

The articles by Charles W. Chandler on "Methods of Sewage Disposal," have created so much interest that arrangements have been made with him for a second series, dealing with the same subject. The accompanying article, which is the first of this series, deals with methods of disposing of sewage from towns and corporations and gives an interesting resume of legislation enacted and pending on this matter.—Editor.

the aerobic and anaerobic germs, the action and uses of which, in reducing crude sewage to harmless compounds, has been fully explained in a previous chapter. It is difficult to appreciate the enormous influence of microbes, which are so infinitely small, but which are so prodigiously prolific, when brought into the presence of conditions suitable for their existence. As an example, Dr. Duclause\* relates that, in examining beer-wort, "M. Pasteur once saw two globules increase to eight, including the parent globules, in two hours. Thus, in twenty-four hours a single one could produce sixteen millions, were it not that by their very multiplication they end in impeding one another." Duclause points out that the action of yeast and other microbes in wort, is to break up organic matters and resolve them into such simple forms as water, carbonic acid, hydrogen and ammonia; also that this fact is not special to wort, but that "whenever and wherever there is a decomposition of organic matter, whether it be the case of an herb or an oak, of a worm or a whale, the work is exclusively done by infinitely small organisms. They are the important, almost the only agents of universal hygiene; they clear away more quickly than the dogs of Constantinople or the wild beasts of the desert, the remains of all that has had life."

## Advances in West.

The problem of sewage disposal in this country is an extremely important one, and it must be admitted that the western provinces have so far made the greatest advances in dealing with this matter. In Saskatchewan, owing to the somewhat limited supply of water, prevention of its pollution was absolutely necessary. The two most important supplies of water for domestic purposes

in that province are from the two great rivers, the North and the South Saskatchewan; the other supplies are such waters as can be obtained from small creeks, shallow underground sources and artificial reservoirs. At a recent session of the Saskatchewan Legislature a Public Health Act was passed, containing important enactments dealing with the question of sewerage and sewage disposal, the passing of which made it possible for the commissioner to insist on the adoption of some method of sewage disposal.

The Standing Committee of the Senate on Public Health, in their third report, dated February 18, 1910, state, in regard to the pollution of waterways by sewage and wastes, that—

"After hearing and carefully considering the evidence, your committee cannot fail to see that the public health of Canada is being considerably imperilled by the present custom of disposing of sewage, garbage, etc., into the lakes, rivers and streams of the country.

"Your committee is of the opinion that the only remedy, and the only safeguard, lies in the passage of legislation to control it. The legislation to be effective must be uniform throughout the whole Dominion, and can only be brought about by co-operation between the Dominion and Provincial Governments.

"It is, therefore, recommended that the Commission of Conservation, representing, as it does, all the Governments in Canada, be requested to call together the health authorities of each province to meet them in conference at an early date, and endeavor to devise means whereby this end may be attained."

In accordance with this, the public health committee of the commission on October 12 and 13, 1910, called a conference at Ottawa at which were represented the public health officials of the various provinces, Dominion officials connected with public health administration, and the public health committee of the Commission of Conservation. After an exhaustive discussion, the report of the committee on the pollution of waterways was adopted by the conference, and recommendations were made that the Government of the Dominion of Canada enact a law prohibiting and penalizing the deposition of rain sewage, garbage and factory wastes in the

(Continued on page 18)



# Heating System of Maximum Efficiency

System Described by an Expert—The Maximum of Efficiency is Obtained With a Minimum of Expense.

D. M. QUAY, past president of the American Society of Heating and Ventilating Engineers, writes as follows in Domestic Engineering:—

It is customary in modern buildings to combine the heating and power plants and utilize the exhaust steam, which would be otherwise wasted, for heating the building.

When using the exhaust steam in heating purposes, it is necessary to provide some means of removing the back pressure from the engines and pumps in order to secure the proper economy in operating expenses, especially in fuel saving.

In designing a combined plant, it is necessary to provide a pressure reducing valve, so arranged that live steam can be automatically supplied to supplement the exhaust steam when it is not sufficient for heating purposes. The pressure reducing valve should be bypassed with three valves in the usual manner.

The satisfactory, economical operation of this combined heating and power plant can be accomplished by the use of a vacuum system properly installed and operated; with its use steam will be circulated effectually at or below atmospheric pressure.

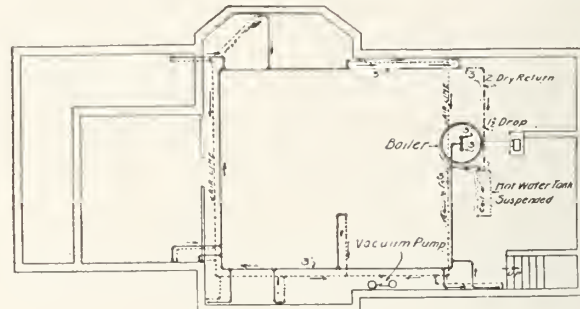
Steam will do as it is asked to when the conditions are right and the proper environment provided.

So in the modern plant, the entire heating system should be relieved of air and gases which would otherwise prevent free circulation and which in many steam heating plants are responsible for pounding noises, cold ends of radiators, leakage of water, steam and foul odors into the rooms.

work being put on the power plant, or additional fuel consumption being required.

This is a concrete case where theory is reduced to practice. A self-contained heating agent doing its work with absolute accuracy, convenience and comfort.

In many instances this kind of a plant



Basement Plan.

By using the exhaust steam for heating, the cost of steam production in winter is but little, if any greater than in summer.

It has been proven beyond question that exhaust-steam, where the oil has been properly eliminated, is as valuable for heating purposes as live steam. In other words, the exhaust which in a large measure is thrown away, is sufficient to heat the building without extra

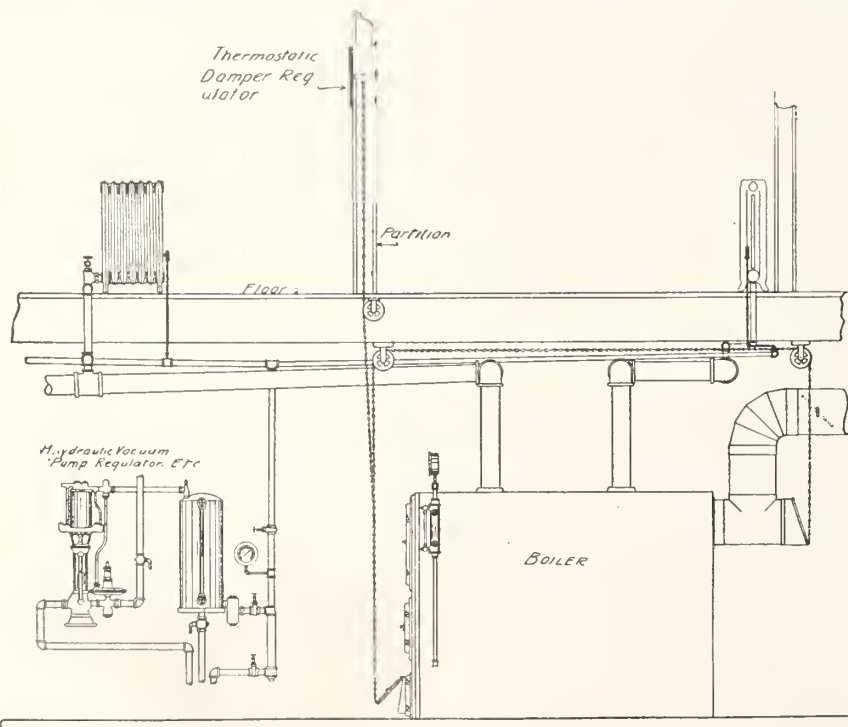
has paid for itself in three years and if this can be done in some cases, it can be done in most cases if the forethought of an experienced engineer is applied in the design and installation of the plant.

The loss of one cent's worth of exhaust steam per minute amounts to about \$1,000 a heating season or 5 per cent. on a \$21,600 investment.

Before the vacuum heating systems were introduced, steam was circulated by pressure, the best specifications calling for from two to five pounds and in many cases where experienced engineers had not been employed to design the systems, a much higher pressure than this was required to circulate the steam and heat the building.

When exhaust steam was used, supplemented by live steam for heating, in buildings having steam, hydraulic steam, elevators and other pumps and steam engine for power and lighting purposes, this pressure was obtained by back pressure on the engines and pumps.

The higher pressure was required to force the air out of the radiator, as well as to circulate the steam and "push" it through the steam pipes, especially where they were too small for the work required or not properly graded and properly dripped. Also in forcing the air out of the radiators by pressure, often parts of the radiators were air pocketed by what is termed "short circuiting" and the air remained in this pocket and prevented these parts of the radiator from heating. Frequently it was several hours before this air became heated and mixed, so that these parts of the radiators became effective,



Elevation showing boiler and equipment for heat regulation and for placing heating system under pressure.

and if the radiator was scant or just large enough to heat the room when it was all working, it was found necessary to increase the pressure in order to heat the building and this was done by putting more back pressure on the engine, which decreased the "coal pile."

This question of not only removing the air, but the water of condensation from tempering and heating coils used in forced blast heating and dryings and mechanical ventilation and from long coils in factory, dry kilns, paper mills,

Dr. Louis Laberge, medical health officer for Montreal, is out with an attack upon his fellow physicians, who, he declares, know little—or care little—about hygiene. It is the doctors, and not the plumbers, declares Dr. Laberge, who are

## Blames Dark Houses for Disease

Dr. Louis Laberge, Montreal's Medical Health Officer, lays Blame for Ill Health in Certain Sections on the Landlords—Says Dark and Poorly Ventilated Houses Give the Poor no Chance—Plumbing is Not Often Much to Blame.

people living in the houses must be educated—although of course he appreciates the necessity of this. He means rather that there is need of the doctors and the civic officials being trained to see things in a new light. "The doctors don't care about hygiene," declares Dr. Laberge. "If they would report houses where they find unsanitary conditions existing our work would be much more effective. But they do not do this. They do the best they can to cure the disease which these unsanitary conditions bring; but they don't attempt to remove the cause."

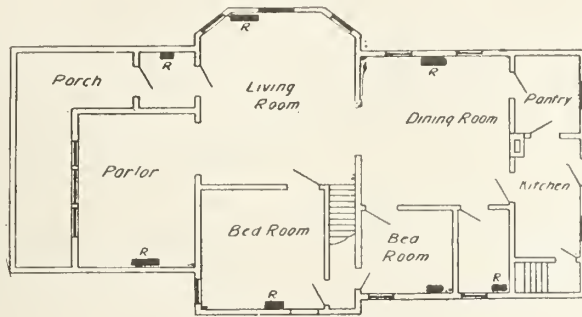
### Wants to Inspect Homes.

The civic officials, too, do not realize the need of proper preventative methods. At least, so says Dr. Laberge. He does not say this without having any suggestion to make. He wants the civic officials to grant him one privilege—that is the right of inspecting all the city's homes. New houses would have to be inspected by the building department, too, the doctor admits, but that could easily be arranged.

The M.H.O. of Montreal has considered carefully what he would do if the aldermen did give him the power of inspection which he desired. He would in short use his assistants as he would like to use the whole medical staff of the city. He would use them as a corps of reporters to bring him word of outside conditions. Mr. Laberge would establish a card index, having each house examined, numbered and described. He would know from this what are the slums of the city. He would know what districts to recommend for expropriation when—at various times—the council decided to establish a playground.

"There is small wonder that the mortality in large cities is so alarming," remarked Dr. Laberge, when speaking on this theme. "Many of the houses are built without any thought of light or air. Workmen go home, after their day's labor, tired out, and sit in rooms at which the sun never gets; where the air is foul, vitiated, and full of germs. What chance have they? What chance have the children reared in such homes."

"We hear talk about bad plumbing," proceeded the doctor. "Undoubtedly there is some of this, but the great cause of the heavy mortality in certain sections is improperly constructed houses. It is to get the right to inspect these that I am after



First Floor Plan.

etc., was a source of great anxiety to the heating engineers.

Developments have been made in vacuum heating systems from time to time, until not only the trade, but the public, have become familiar with their use, and many improvements have been discovered and developed, and the advance of the vacuum heating system in recent years has been rapid.

Requirements of the present day for heating plants have become rigid and exacting. The system must operate quickly, the radiators heat quickly, no offensive odors from air valves will be permitted, the piping must be small enough to conform with modern building conditions and the system must operate without pressure under these conditions and without back pressure on engines or

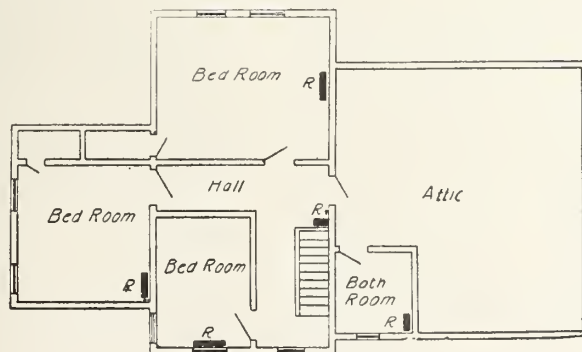
responsible for the spread of disease in certain sections.

Of course Dr. Laberge is saying these things with a purpose—said purpose being to secure a system of inspection, which, he believes, will tend toward the abolition of certain slum districts. It is the houses—according to the doctor—which are at the bottom of so much sickness; the houses themselves and not the plumbing which is put in them.

That will be a statement of interest to many sanitary engineers, who have become almost hardened through constant blame for conditions which in many cases were not their fault.

### Educate Civic Officials.

According to Dr. Laberge the great thing necessary to achieve a satisfactory degree of public health in a city of



Second Floor Plan.

pumps where a combined heating and power plant is used.

Extensive tests have shown that better and more efficient heating is accomplished with lower temperature in the heating surfaces.

Montreal's size is to educate the people. There must also be legislation; but it is education which is especially needed.

And when he speaks of education Dr. Laberge does not so much mean that the





# POINTS ON HEATING

by  
CHAS. H. DENISON



## Chapter 27.

### Reliability vs. "Stall"-Ability.

The ability to "put something over" on a customer is regarded by some as a mighty cute and proper thing to do. "If said customer has not yet cut his eye teeth, is it my business to assist in the operation?" argues John Sharp, when his honesty in certain unfair practices is called to question, and then he falls back upon the old P. T. Barnum philosophy that the public likes to be fooled, and the question is settled so far as he is concerned.

It does not stop there, however, for you must allow that John Sharp's example will be followed by some, while others will follow similar practices in sheer self defence. Again, there is the result upon the customer and the action he (or she) takes.

### Points on Heating.

In order to get customers within their net it has been the habit of many business institutions to advertise heavily some one or two very commonly used commodities at a price which every one could not help positively knowing was a loss. I want to stop, in passing, to remark that I do not allude to honest merchants who put out a flier, such as grocers, butchers, etc., for these merchants are "game" and generally sell as advertised. They can well afford to lose a few cents on a dozen eggs or a roast of beef for they are sure to get it back in the long run.

I allude, more in particular, to certain concerns who put forth glaring "ads." in various newspapers in their own towns, playing up most anyway to public curiosity in order to draw more or less of a crowd. Once the people are within their doors it is found that the advertised articles have "run out" or are limited in number and the merchant tries with all his power to induce the customer to make other purchases.

These thoughts are brought out by a series of observations that were made by a couple of salesmen some time last year. Said Jones to Robinson, "Where in blazes is some more of that gum tree product we advertised yesterday?"

Answered Robinson, "There ain't any left and I lost five customers already this morning. I couldn't 'switch' them on to anything else and the boss is mighty hot at me."

There you have it and all in a nutshell. A bait hung out and with the expectancy of being able to switch the customer. The idea of ever fulfilling the ad. set forth was never calculated upon. Some difference, isn't there, between such practices and the losing of a few cents upon coffee, tea, spices or sugar?

Perhaps you think that all this hasn't a single thing to do with heating or plumbing, but if so you are very much mistaken. A certain plumber was once heard to remark "I'm going to get work into the city of Jericho if I have to give it away." He did. He arrived in Jericho, hung up a number of first-class jobs and then tried to switch other customers to different lines. Some "switched," others didn't. The result was our friend busted.

Another plumber stuck a first-class lavatory called the Royal Non-Such in his show window, advertised it big at a price about two dollars less than it really cost to make it at the manufactory. (He wasn't "regular," by the way.) Of course, the people came and when they arrived, he'd "sold all out." Tried substitution, but it didn't work well and he lost far more trade than he gained and was out the advertising to boot.

Did it pay him, this "switching" business? It certainly did not, and I very much doubt if it pays anywhere, for the "switched" customer is generally sore. He's hurt because he has been led to buy something different than he intended—has, the chances are, spent more money than he expected to and besides been cut out of the bargain he had his mind fixed upon. If you think men don't appreciate a bargain nor know one when they see it you are vastly mistaken for it is not limited to the weaker (?) sex by a long shot.

It's all right to have a "leader" in your ad; but not good practice to put out something that you can't afford and have to hedge on just as soon as the pub-

lic begins to take hold. Better to have things go a bit more slowly and be reliable. Get to be depended upon rather than occupying a position in people's mind like a question mark.

Make good the articles you advertise. Do not get the name of putting out "bargains" that you never intend to fulfil nor of setting "baits" to catch other customers by doing work or jobs for a figure that will not give you a decent living profit. Why should you hand the general public money that belongs rightfully to you? There is no reason, and you'll soon go broke trying to do it.

### FOR THE SOLDERING IRON.

Editor Plumber and Steamfitter.—What is it that they use on a soldering iron to make it tin easier and keep it cleaner? "Q."

Possibly "Q." has reference to the use of sal-ammoniac. A stick of this article lying around will be found most useful. When thinning the soldering iron do not heat it too hot or the sal-ammoniac will crust over its surface. The sal-ammoniac will keep the soldering iron in good shape, when soldering, if the iron is occasionally rubbed in the same.—D.C.H.

### BRANCH CONNECTION FROM MAIN TO RISER.

Editor Plumber and Steamfitter.—Which would you consider better in running the branch on a steam job from the main to the riser, to rise straight from the tee using a 90 degree ell and then run to the riser, or to throw the tee at an angle that would render a 45 degree ell usable, and why?

Fitter.

Either method has many advocates. Personally we prefer throwing the tee and using the 45 degree ell as we consider that it makes a neater looking job, that the expansion can be looked after at the bottom of the riser by using two ells and a close nipple and that the condensation in returning through the 45 degree ell will not so fully close up the inside space available.—D. C. H.

## Advice on Drawing Up of Contracts

**Mr. Milliken, Well-known Toronto Lawyer, Gives an Address Before the Members of the Toronto Association of Domestic Sanitary and Heating Engineers—Lien Notes Discussed.**

**A**N address of deep interest was delivered before the members of the Toronto Association of Domestic Sanitary and Heating Engineers at their March business dinner by Mr. Milliken, of the legal firm of Mulock, Lee, Milliken and Clark, Toronto. Mr. Milliken took up various aspects of sanitary and heating work, relating particularly to the drawing of contracts and specifications and the securing of lien notes.

The meeting was largely attended, many prominent members of the trade being on hand who had not been seen at previous dinners. A. F. Passmore presided.

Mr. Milliken's address covered many vital points in concise manner and he answered a large number of questions in addition. The members went away with a great deal of good advice to guide them in their methods of handling contracts in future.

One of the strongest points urged by the speaker was that the sanitary and heating engineer should always see to it that he secures a copy of the contract. In countless cases he signs the contract, which is left with the architect and goes away without a scrap of writing to show what he is expected to do. When difficulties arrive, the plumber finds things in the contract which he did not thoroughly understand and which have a material effect on the carrying out of the job.

When the plumber has a copy of his own, he can consult it regularly and make sure that he is carrying out the work strictly in accordance with the terms of the contract. An infinite amount of trouble would be saved if this were done in every case.

The speaker stated that he had known cases where there had been clauses inserted in contracts providing that no extras were to be put in unless ordered in writing. Not realizing the significance of this—or having forgotten it—verbal instructions were often accepted and extra work done. When the plumber tried to collect the money in such cases he failed to get a cent. The clause in the contract would be pointed out to him and the written authority for the extras demanded before payment was made.

This was a point to be borne in mind. No extra work should be done without proper authority.

### Careful Consideration of Contracts.

Stress was laid on the importance of carefully going over each clause of the

contract before signing. The plumber should make sure that he thoroughly understands every part of it before he appends his name. If care is thus exercised and a signed copy secured, the plumber will find that he will experience less trouble than heretofore.

Special attention should be paid to penalty clauses. Their bearing should be understood.

### Lien Notes.

Mr. Milliken also touched upon the question of lien notes, pointing out that it was within the power of the plumber

to protect himself from the start. Some points were explained with reference to the placing of lien notes and quite a few questions were asked by various members.

### Copies of Specifications.

Mr. Milliken pointed out that copies should always be secured and kept of the specifications. Not only does this prevent a great deal of trouble after but it serves as a guide to the plumber in carrying out the work and enables him to follow out instructions to the letter.

At the conclusion, the speaker affirmed his willingness to answer questions and quite a few were asked. A helpful discussion ensued.

A hearty vote of thanks to Mr. Milliken was moved by Wm. Mansell and seconded by Mr. Clapperton.

## A Definition of the Unit of Heat

**An Address Delivered by Reginald Pelham Bolton at a Recent Meeting of the American Society of Heating and Ventilating Engineers in New York.**

**T**HERE does not appear to be any good reason for maintaining the use of the title "British Thermal Unit" as a description of the unit of heat, which forms the basis of modern thermal and thermo-dynamic computations. The title is unnecessarily clumsy. Furthermore, it is local, having the appearance of an assumption of priority on the part of one nationality, which is not suited to a matter of purely scientific nature, in which others are equally concerned.

The abbreviation of signs in some simple form is a desirable feature in connection with scientific computations and work. The clumsy "B. th. u." which is still used by the Institution of Civil Engineers and other British institutions, cannot be justified on this ground. Reference to leading text-books indicates not only variation in the form of reference to this measurement, but in stating its value.

I append hereto extracts from books by several authorities, in which variations of value are shown, as well as some confusion in the duplication of the title applied to this simple element of computation.

It appears from an examination of these and similar works dealing with subjects with which engineers are concerned, that the student is liable to be confused by a conflicting use of these abbreviations. In one recently published trade catalogue containing interesting and valuable material for reference, I observe the use of both abbreviations on the same page. These considerations indicate that there is much to be gained by the permanent adoption of the des-

cription of the basic unit of heat measurement in its simplest form, the "Heat Unit," and its abbreviations by the letters h.u., a method already adopted for practical convenience and in wide use among engineers and requiring only the sanction of some recognized scientific body, such as this society, in order to become a fixed part of the nomenclature of engineering science.

In order that this result may be effected in a regular and carefully considered manner, I propose that the standing committee on standards be requested to take this matter in hand and after due examination of authorities to make a recommendation for adoption by the society.

### TESTING OLD PLUMBING WORK.

Editor Plumber and Steamfitter.—Do you think that it is advisable to test out plumbing work that has been in for some time—say from two to six years?

Interested.

An answer to this question must be qualified somewhat. If the plumbing was in a building that rested upon ground known to have a habit of settling, or if the plumbing was in a very cold climate, or if, by any sad mischance, it happened to have been done by a man known as a chronic "lowest bidder," we believe that it would be an extremely wise proposition to have said plumbing thoroughly tested out at least every other year; perhaps once a year, say in the springtime would be safer. Extremely tall buildings are also worthy of attention unless scientific preparation has been made for the expansion.—D. C. H.



# Complete Course of Sheet Metal Work

By L. W. KOSER--No. 4

Place the T-square parallel to the line N-M and bring it successively against each number on the profile, and make a mark on the corresponding measurement line.

A line traced through these marks will give the pattern.

It will be noticed that at the bottom of the pattern we have shown a flange, that does not appear on the profile; this is for folding over to strengthen the bottom of the finial base. Try and set the work as near as possible to that shown on the plates.

Plate 6 gives a few problems which are done the same as Figures 7 and 8, Problem 2.

Fig. 1 is an ordinary OG eavetrough,

## KEEP COURSE ON FILE.

For the benefit of all who are following Mr. Koser's course in sheet metal work, we have a suggestion to make. Tear out the pages devoted to the course and keep them on file. It will be found that references will be made to figures shown on plates used earlier in the series and it will be possible to follow the instructions more carefully if all plates are on hand for ready reference.

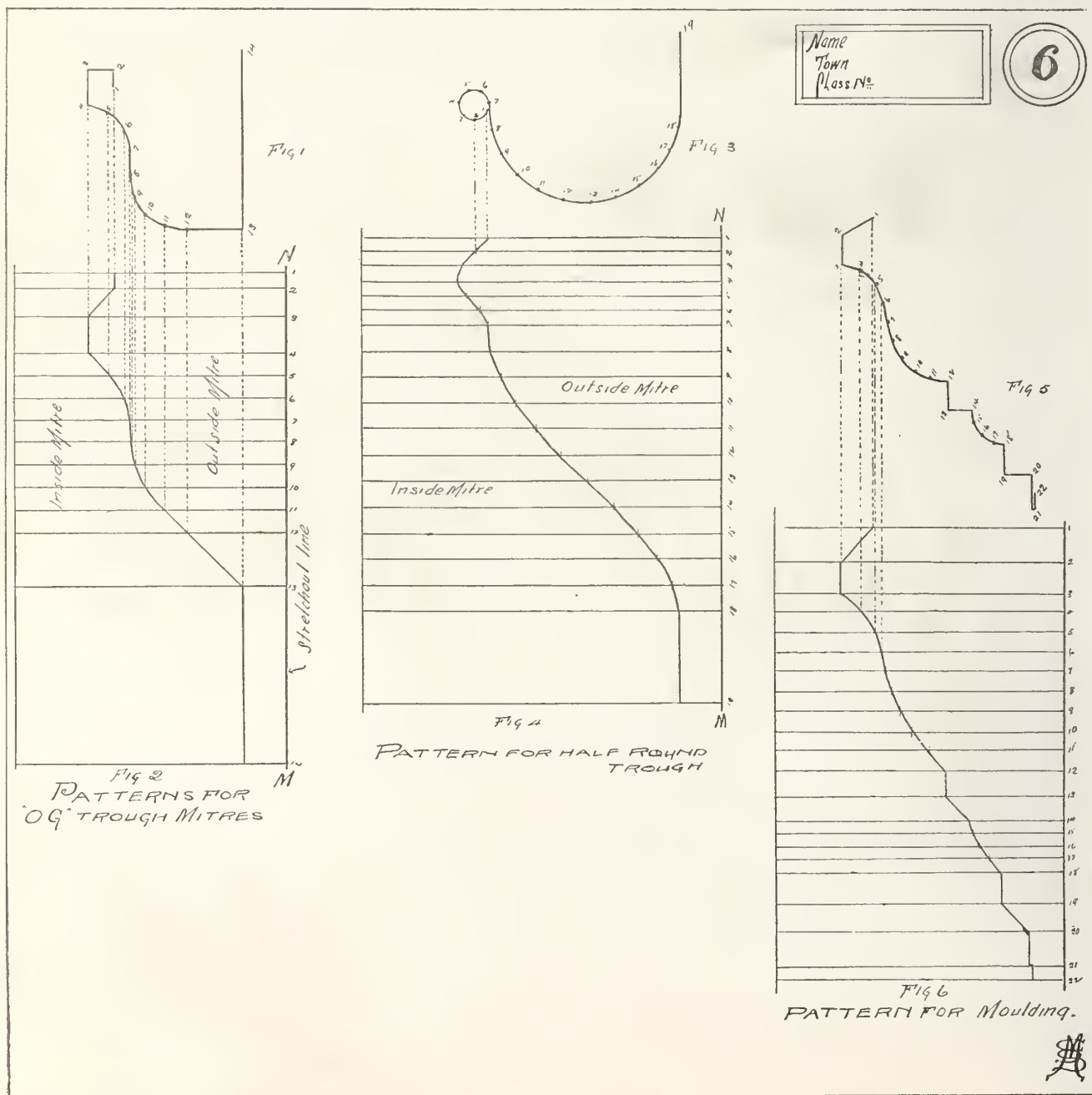
trough and Fig. 4 is its inside and outside mitres.

The metal worker will soon learn to drop the points on the profile to the measurement lines on the stretchout without using the dotted lines. Merely place the edge of the T-square against the different numbers on the profile and make a mark on the measurement lines directly below which have the same number, then a line traced through these marks gives the pattern.

Plate No. 7 shows the method of developing the pattern for any style of square ornament.

In problem 1, Fig. 1 is the elevation of a finial base and Fig. 2 is the pattern of

and Fig. 2 is its inside and outside mitres. Fig. 3 is a half-round eave-



one side, the other three sides of course being the same.

In problem 2, Fig. 2 is the elevation of a small finial and Fig. 4 the pattern of one of its sides.

The method of developing a pattern for a square ornament is practically the same as getting a square mitre.

The elevation or profile of the object is first drawn, as Figures 1 and 3.

The curved parts are divided into any number of equal spaces; the spaces on the different curves do not, however, have to be the same distance apart. In fact, they could not very well be so; the width of the space depends almost solely on the sharpness of the curve. For instance, where the curve is small, it is necessary to divide it into smaller spaces so that the distance from one space to

another is as near a straight line as it is possible to get it. On the other hand, if the curve is large the spaces can be fairly wide apart.

Now take Fig. 1. Begin at the top and number this 1, and where the first bend occurs, number it 2; divide the curve into any number of equal spaces and number each; divide the large curve into any number of equal spaces and number each. The next number occurs where the next bend comes.

Then comes another curve which is divided into equal spaces and numbered. Continue on to the end of the pattern, placing a number wherever a bend occurs in the profile.

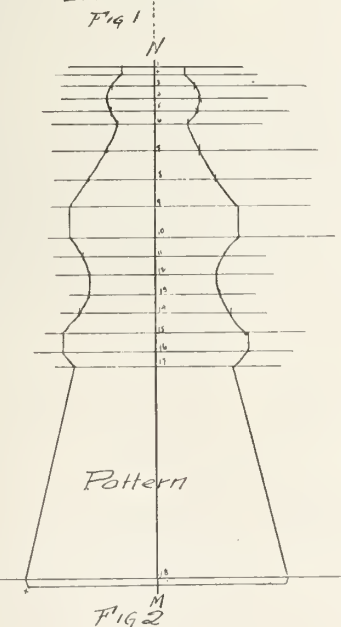
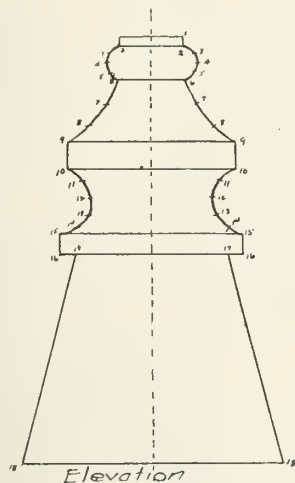
Lay off the line N-M and transfer the stretchout of the profile to this line, and draw the usual measurement lines

through each number; in this case, the measurement lines are drawn about equal distance on either side of N-M.

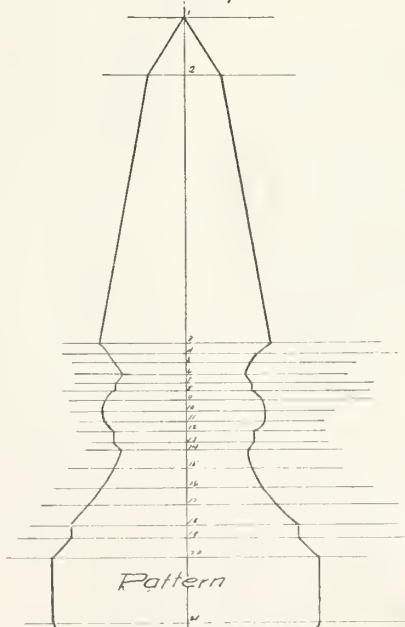
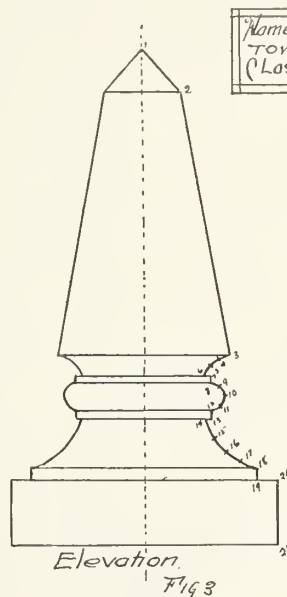
## HEATING PIPES BEHIND PARTITIONS.

Editor Plumber and Steamfitter.—Is it a good plan to run steam or hot water pipes out of sight behind the partitions?  
J. C. H.

It depends somewhat upon the fancy of the owner and the honesty of the heating contractor. Pipes passing through a room are not an ornament; on the other hand they radiate a certain amount of heat. If the fitter is honest and efficient he can so instal the pipes behind the partitions, if desired, in a manner that will render all worry from leaks unfounded.—D. C. H.



PROBLEM 1



PROBLEM 2

Name \_\_\_\_\_  
Town \_\_\_\_\_  
(Class No. \_\_\_\_\_)



*Handwritten signature or mark.*



## Plumbing and Heating Markets

### MONTREAL.

Montreal, March 29.—The English coal strike is causing the manufacturers of some plumbing lines considerable worry. They have had trouble enough to get coal and coke of late, owing to the scarcity of cars, and now this strike seems to threaten a real scarcity. That can mean only one thing—higher prices.

Truth to tell this higher level is already being struck. Soil pipe is the first commodity to be advanced. Here the quotations have not been changed, but where manufacturers were accustomed to shade for large orders they now refuse to do this.

### No Future Delivery.

Orders for future delivery are now regarded with some disfavor too. Recently a large buyer asked a maker of heating coils to give him a certain price for all this product which he would need. This the manufacturer flatly refused to do. "I'll sell you as much as you want now," he said, "but I'm not going to bind myself to furnish you with goods at the present price three months hence. Why we may be paying much more for coal and for raw material then."

### A Good Time to Buy.

For the large buyer, indeed, this would look like a good time to lay in supplies. Prices in practically every line are likely to advance.

Enamelware.—Houses nearing completion are being equipped with bath room fixtures, sinks, and washtubs as rapidly as possible. The aim is to get them ready for occupation in May. This means large orders by the contractors, and a great deal of work for the sanitary engineers.

Orders from the west are being received daily. There the dealers are getting ready for a heavy season's business.

Soil Pipe.—The manufacturers have been producing in great quantities all winter, yet the demand has kept up remarkably and the reserve supply is not as large as they would like. They fear the fall rush may find them short as they were last year.

### Iron Pipe Peculiar.

Iron Pipe.—Here prices may not be greatly affected by the English conditions. Strong American competition makes this a market which tends to remain low.

Furnaces and Radiators.—New buildings are being equipped with furnaces, and as there are many new buildings the demand is good. It promises to assume gigantic proportions during the summer.

The same is true of radiators. Those for use on walls are even now hard to find.

### TORONTO.

Toronto, March 29.—There is a much brisker tone to the market but the real spring activity has not yet commenced. Some good sized orders are being placed, particularly in the city. In view of the fact that a record building year is assured, the manufacturers and supply men are anticipating a big demand as soon as the weather becomes more settled and favorable.

The strike situation in the Old Country is creating considerable uneasiness among the manufacturers. If it continues, the chances are that all lines of industry in this country will be hampered to a serious extent. The only real effect noted so far is a tendency to discourage orders for future delivery.

Enamelware.—The demand has grown larger and enquiries are coming in with every mail.

Boilers and radiators.—It is generally anticipated that the demand for boilers and radiators this year will break all records. Building operations will be in excess of 1911 or any preceding year and this will mean, of course, corresponding activity in the heating trade. At the present time there is a fair demand. More work is being done it seems than at this time last year.

Soil Pipe.—The call for soil pipe is strengthening. Several good-sized orders were placed to-day for delivery around the first of the month. Quotations on medium and heavy soil pipe are: 70 and 10. On the 7 and 8-inch sizes, the discount stands at 50 per cent.

Iron Pipe and Fittings.—While there is not yet a very heavy call for anything in this line, the demand is slowly "coming along." Galvanized pipe, 1-inch size is quoted at \$6.02 and 1-inch black pipe at \$4.37. Other quotations remain the same, as follows: Cast iron fittings, 65 to 70 per cent.; malleable fittings, 37½ to 40 per cent.; cast iron bushings, 70; malleable, 67½; nipples, 75 and 10; headers, 60 and 10, although some quote 67½ and 70; flanged unions, 70; malleable-lipped unions, 67½ per cent.

Lead Pipe.—The price of lead pipe remains steady at 7 cents. Lead waste sells at 9 cents with 25 per cent. off. Caulking is quoted at 4½ cents. The discount on traps and bends is 45 per cent.

Solder.—The demand is growing for solder. Wiping is quoted locally at 22 cents; half-and-half at 26 cents.

Metals.—The situation has not changed to any extent since last writing. The

main topic of conversation on the metal markets is the mining strike in the Old Country and its probable effect on business here. It is agreed that the situation is grave and that trade may suffer to no inconsiderable extent if the strike continues.

## METHODS OF SEWAGE DISPOSAL.

Continued from page 11.

waterways of Canada and in the waters tributary thereto. As a result of these recommendations legislation was introduced in the last session of Parliament, but owing to the sudden termination of the session, was not passed. The bill, "An Act respecting the Pollution of Navigable waters," has been reintroduced this session, and may become law at an early date.

Section 2 of this act makes the following provisions: Every person is guilty of an offence against this act and liable on summary conviction to the penalties hereinafter provided, who puts, or causes or permits to be put, or to fall, flow, or to be carried into any navigable water, or into any other water any part of which is navigable or flows into any navigable water; (a) any solid or liquid sewage matter; or (b) any other solid matter which, not being sewage, is poisonous, noxious, putrid, decomposing, refuse or waste; or (c) any liquid matter which, not being sewage, is poisonous, noxious, putrid, decomposing, refuse or waste; unless such matter, whether solid or liquid, is disposed of in accordance with regulations or orders made on permits granted under the authority of this act.

The penalties for every corporation convicted of an offence against this act would be a fine not exceeding five hundred dollars, and an additional amount of fifty dollars for each day the offence continues, and for every person, other than a corporation who is convicted, a fine not exceeding fifty dollars, and an additional amount of ten dollars for each day the offence continues, or to imprisonment not exceeding two months, or to both such fine and imprisonment. These drastic restrictions, however, are somewhat modified by a clause to the effect that the Governor in Council, when it is shown to his satisfaction that the public interest will not be injuriously affected thereby, and with due regard to the interests involved and to the circumstances, means and requirements of the locality or district, may from time to time, declare any such waters, or part, or parts thereof exempted from the operation of this act, and on such conditions and terms as he may prescribe.





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Hot Water Quick Opening Radiator Valve.

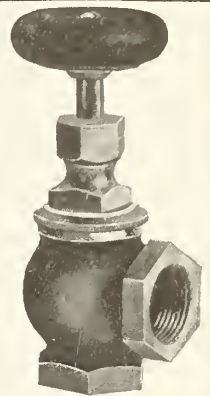
**"Miller" Hot Water and Steam Radiator Valves**

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

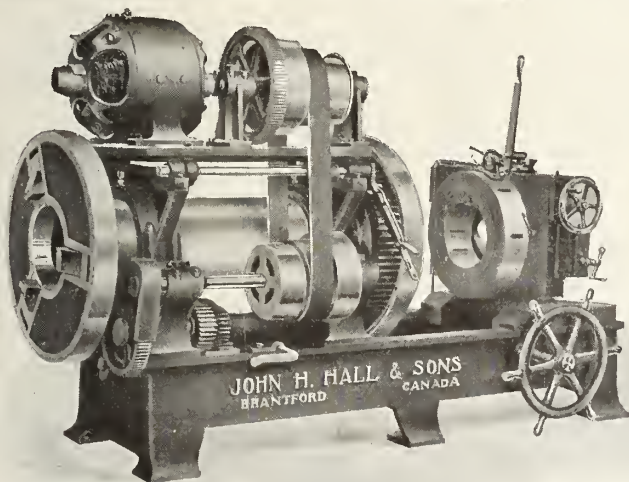
We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.



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**Pipe Threading Machines**

Belt or Motor drive, all sizes, for the Plumber, the Jobber, or the Mill; also

**Double and Single Head Rapid Nipple Machines**

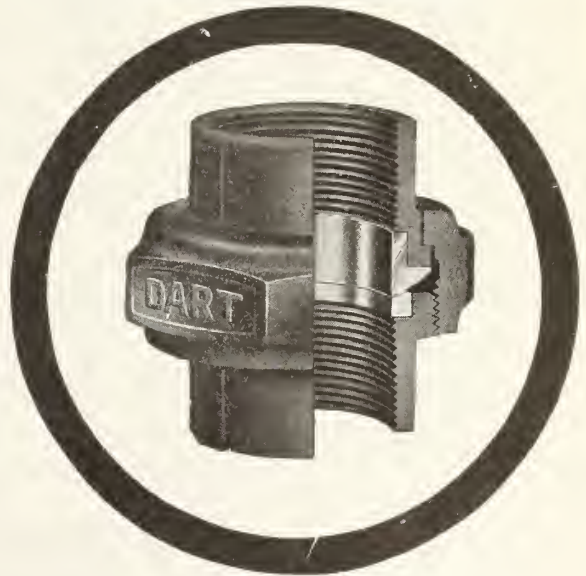
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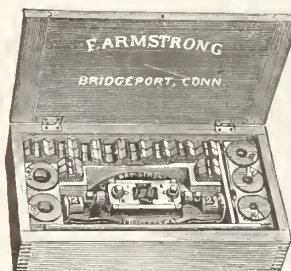
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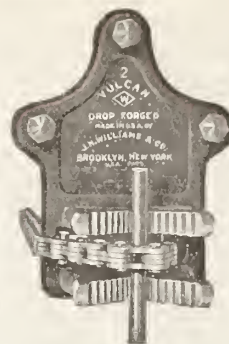


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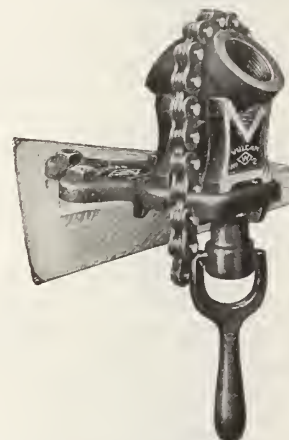
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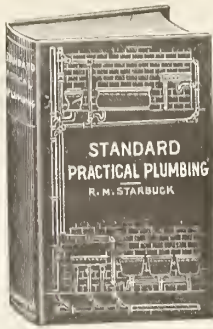
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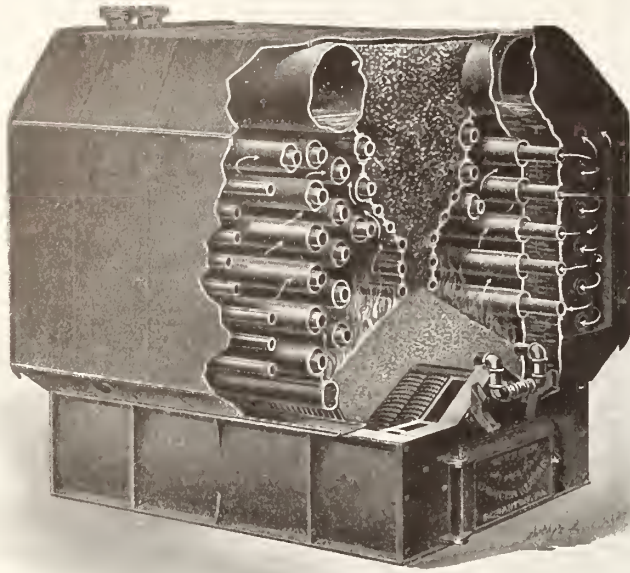
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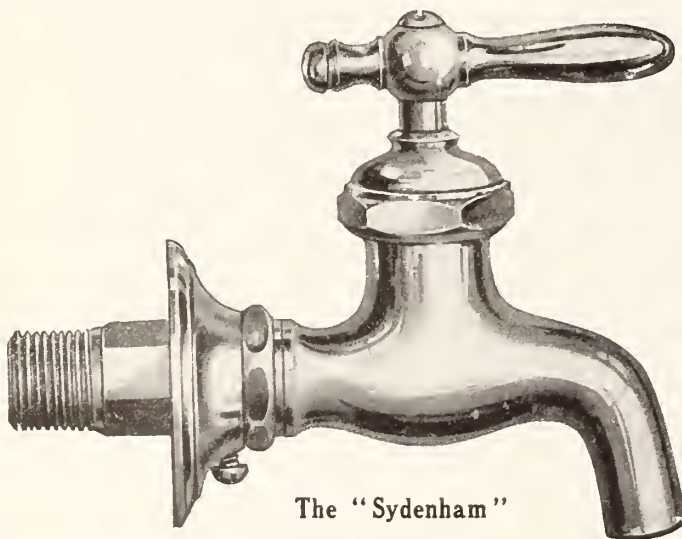
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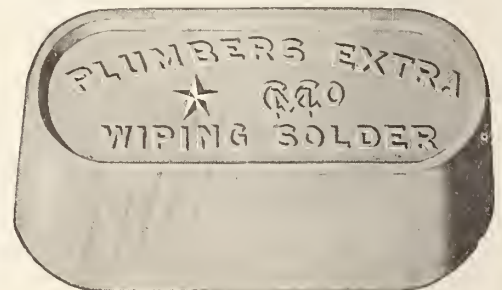
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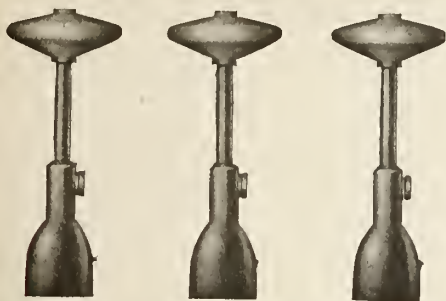
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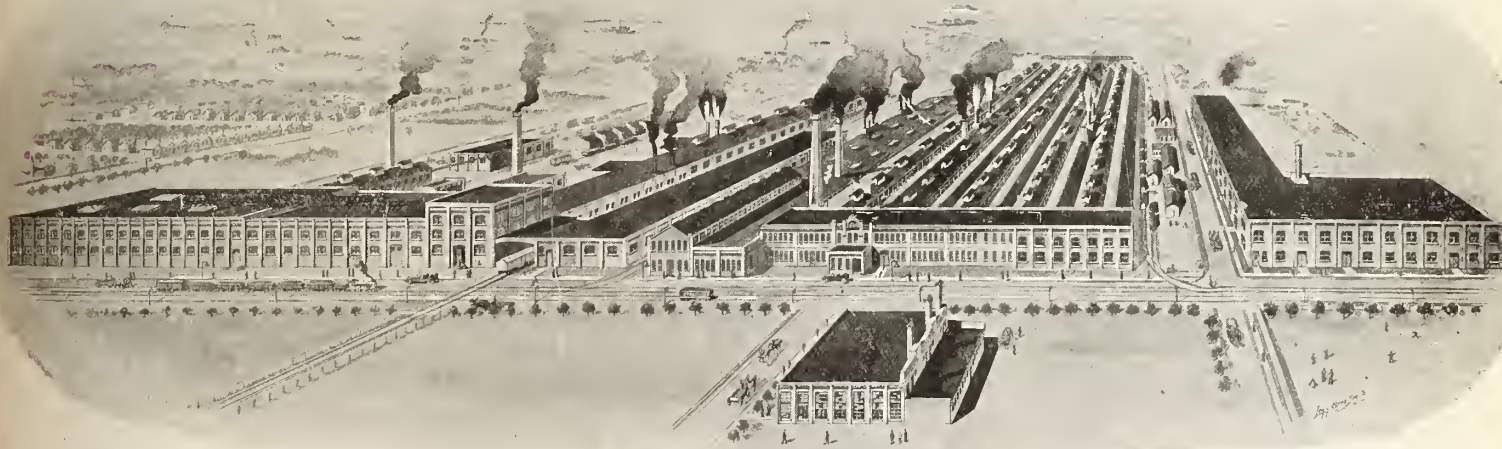
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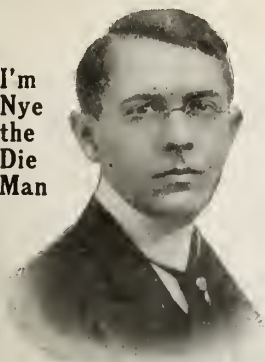
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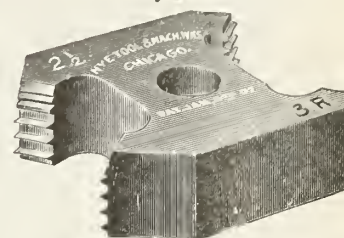
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# "KING"

## BOILERS AND RADIATION

PROMPTLY SHIPPED

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GUARANTEED

EXTENSIVELY  
ADVERTISED

EASILY INSTALLED—  
Because Accurately Made.



### Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

## STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

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138 Craig St. W.

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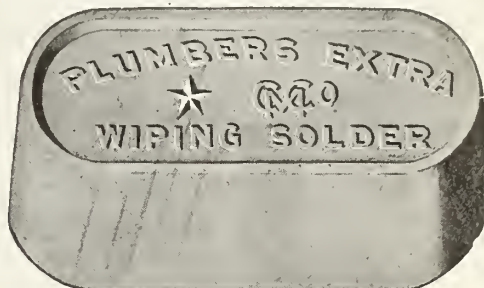
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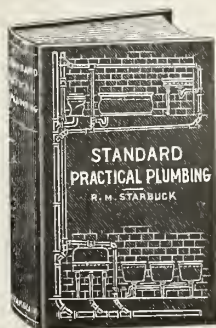
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Trap (Ask for Cut or Price)  
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Iron and Lead Combination  
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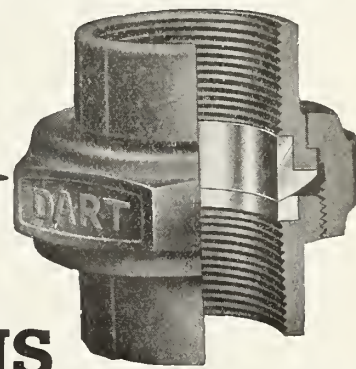
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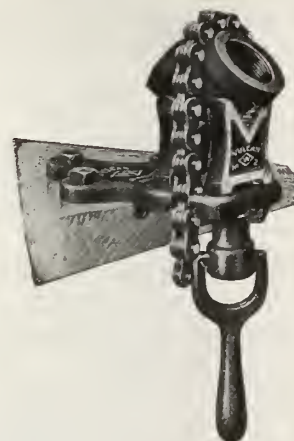
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J. E. Farrell, North Bay.



W. Mansell, Toronto, One of the Directors.



I. Mahoney, Guelph.

year. Thus, with an assessment of \$5 per head, the expenses of the department would be met.

Accordingly on a motion by P. Hayes, seconded by J. Marshall, the incoming directors were authorized to appoint a salaried officer. It was carried unanimously, with a standing vote.

#### No Change Made Here.

When the notice of motion changing the number of members needed to constitute a local committee from 10 to 3 came up, Harry Mahoney who had fathered the notice, announced that he had come to the conclusion that it would probably be better to leave the clause as it was. Accordingly the notice of motion was withdrawn.

On a motion by J. A. Caslake, of Collingwood, and Wm. Mansell, the question of preparing examination papers was left to the incoming examination committee.

#### Selling Outside Trade.

Discussion waxed warm when the question came up of the tactics of manufacturers and supply houses in selling outside the trade.

The matter was brought up by Ed. Higginbottom, of Fort William, who stated that he had been authorized by his home association to ask if something could not be done to prevent the practice of supplying parties outside the legitimate trade. He stated that it was common for certain firms to sell range boilers to tinsmiths at a lower rate than the plumbers could get them for.

He also stated that he had been instructed to bring up the question of the standardization of ordinances.

A long discussion ensued during the course of which many cases were men-

tioned where goods had been sold to outside parties.

After some pretty warm opinions had been passed, motions were carried, outlining a course of action for the future.

On the motion of Messrs. Hayes and Boddington, the report of the Board of Directors was then confirmed as a whole. The reports of the various chairmen of committees were proceeded with.

#### Heating Forms.

The report of H. G. Waterman, chairman of the Heating Committee, contained a recommendation that the society prepare heating specification forms for the use of the trade, so that it would be possible to eliminate the use of forms supplied by manufacturers. The report was also recommended that the quoting of heating work by so much per foot be eliminated.

It was adopted on a motion by F. Maxwell and J. E. Farrell.

#### To Urge Uniform Code.

Harry Mahoney, chairman of the Legislation Committee, reported that considerable work had been done during the year. The directors, being in a position to look after things, had shouldered the duties and had secured the necessary charter for the society and had drawn up the constitution and bylaws. He referred to the fact that the government had appointed 15 district health inspectors and recommended that an effort be made to enlist the interest and co-operation of these inspectors for the improvement of sanitary conditions. He also recommended that the enactment of provincial health and sanitary laws be urged, and closed with the suggestion that all members should adopt as their watchword: "Make the society the strongest in Ontario."

#### Apprenticeship Matters.

J. Marshall, chairman of the Apprenticeship Committee, submitted a report in which he recommended that measures be devised to effect the following reforms; that the masters themselves make a careful selection of boys; that there be a uniform wage throughout the province; that there be some method for indenturing apprentices; that there be a uniform time for declaring apprentices to be "improvers;" that an effort be made to weed out all but the best boys.

The report was referred to the incoming committee.

#### Financial Report.

The financial report was submitted by Wm. Mansell, showing that there was \$152.45 cash on hand.

#### Educational Work.

C. Hicks submitted his report as chairman of the Educational Committee, giving some valuable recommendations. The establishment of an information bureau in connection with the society, the holding of business dinners by local associations and the use of good text books by all members were among the points taken up. It was adopted in the motion of Messrs. Higginbottom and Marshall.

Satisfactory reports were also submitted by J. A. Caslake and J. Eggett, chairmen of Arbitration and Examination committees respectively.

A communication was read from A. C. Waltz, extending greetings on behalf of the Twin Cities' Association.

The report of the auditors was read by H. J. Peter, showing that everything had been inspected and found satisfactory.

#### Delegates to National.

The question of appointing delegates to the convention of the national body, the



Canadian Society of Sanitary and Heating Engineers, was then taken up. On the motion of Messrs. Hayes and Prince, Wm Mansell and G. F. Frankland were appointed delegates to represent the provincial, with powers to add to their number.

It is probable that quite a number of members will go "on their own hook." J. A. Caslake informed the gathering that he expected to go. John Eggett and H. J. Peter followed with similar information. There will probably be quite a number of others.

A vote of thanks to the Toronto Association for their welcome and reception of the outside delegates was tendered on the motion of Harry Mahoney.

A motion by J. E. Farrell and W. Boddington, to the effect that the incoming heating committee have specification forms drawn up, that they be submitted to the directors for their approval and that 5,000 be printed and sold at cost to the members, was adopted.

On the motion of E. Higginbottom and J. Marshall, it was decided that a verbatim report of the convention proceedings be printed and a copy sent to each delegate.

#### Presentation to Secretary.

The general feeling that the hard work done by corresponding secretary Frankland and the very valuable services that he had rendered during the year should not go unrecognized, was evidenced when a motion was put by J. Marshall, seconded by W. Boddington, that the directors be impowered to get a suitable token for presentation to Mr. Frankland in recognition of his services. It was carried by a standing vote with great applause. Shouts of "speech!" testified to the desire of the meeting to hear the worthy secretary, but "G. F." managed to evade the issue by busying himself with the distribution of certificates.

#### Election of Officers.

Then came the election of officers. In announcing that order of business, President Legrow pointed out there was in every movement a great danger of a reaction setting in. It was important, therefore, that the members should strive to avoid this in the year that is ahead. A good foundation for the work of the society had been laid. Referring to the question of selection, he asked that he be not elected again.

On the request of the president, Mr. Mahoney then took the chair and an interesting discussion was opened.

Both Mr. Mansell and Mr. Maxwell spoke, referring to the fact that a tremendous amount of work had fallen upon them during their term of office. While not anxious to shirk, they asked that they be relieved of office.

Mr. Mahoney.—"We appreciate all that the directors have done but just the same don't hesitate to renominate and re-elect the present officers."

Ed. Higginbottom moved, seconded by Mr. Smith of Guelph, that the board of directors be re-elected in its entirety.

It was suggested, however, that Messrs. Legrow, Maxwell and Caslake be appointed a nominating committee and the idea was acted upon. While the committee were out, a number of matters were informally discussed.

On the motion of J. E. Farrell and J. Murphy, a vote of thanks was passed to Plumber and Steamfitter for the assistance it had rendered the association. T. B. Costain responded.

#### Old Directors Remain.

J. A. Caslake brought back the report of the Nominating Committee. He explained that he had pointed out to the other members that for the old directors to withdraw at this juncture would mean that three new men entirely unacquainted with the work, would step in. This would necessarily mean a certain loss of efficiency in the conduct of society business. Accordingly he had prevailed upon the three directors to remain in office for another year, on the understanding that they should have a couple of associate members who could be initiated into the work and thus be in a position next year to assume office. In this connection, the names of J. Eggett and H. G. Waterman were mentioned.

The announcement was received with hearty handclapping and the old board of directors were unanimously elected for another year.

In future years elections will be so arranged that at least one old director will be left on the board.

President Legrow accordingly resumed the chair and, with characteristic energy, he assured the members that the directors intended to go right ahead with the work authorized. They would appoint a salaried secretary and, if the funds ran out, they would not hesitate to call on each man present for the amount guaranteed.

#### Chairmen Elected.

The election of chairmen of committees was then proceeded with, resulting as follows:

Sanitary.—R. G. Sturgeon, Peterboro.

Heating.—H. G. Waterman, Toronto.

Arbitration.—J. A. Caslake, Collingwood.

Auditing.—H. J. Peter, Stratford; Geo. Ross, Brockville, and E. H. Barnes, Sault Ste. Marie.

Legislation.—H. Mahoney, Guelph.

Apprenticeship.—W. Brittain, Hamilton.

Educational.—J. E. Farrell, North Bay.

Examination.—J. Marshall, North Bay.

As this concluded the business of the convention, an adjournment was reached.

## The Delegates Present at Convention

Those present at the convention were: Geo. Ross, Brockville; Thos. Ferguson, Eglington; W. R. McArthur, North Bay; J. E. Farrell, North Bay; Harry Mahoney, Guelph; C. T. Bull, St. Thomas; Fred Staunton, W. Brittain and A. Mitchell, Hamilton; W. J. Boyce, Wingham; J. Cunningham, Paris; T. Rudowe, Elmira; T. Lockhart, Galt; J. A. Caslake and W. Parrott, Collingwood; E. D. Higginbottom, Fort William; E. H. Barnes, Sault Ste. Marie; J. Marshall, Port Arthur; J. Hainsworth, H. Wolfhard, Wm. Knell, Chas. Hollinger, Urius Israel, Berlin; W. F. Mickus, W. A. Spalding, Preston; Louis Gris, Dundas; John Eggett, London; R. G. Sturgeon, Peterboro; J. Ross, Galt, C. C. Harris, Brighton; J. Bloom, Hamilton; F. Smith, Geo. E. B. Gringer, Guelph; Jas. Murphy, New Liskeard; H. J. Peter, Thos. E. Henry, Stratford; R. C. Puddicombe, Ayr; R. F. Bennett, Galt; F. R. Maxwell, G. F. Frankland, Lewis Legrow, Geo. Clapperton, J. H. Warwick, W. Boddington, Geo. Syme, T. B. Smyth, Wm. Mansell, T. M. Maxwell, A. F. Passmore, T. H. Hutchinson,

J. Shutook, P. J. Hayes, John Wright, J. Aggett, H. G. Waterman, E. T. Need-Needham, H. Blumberger, H. Ruddick, M. Quade, T. Prince, H. Hicks, A. Read, A. W. Larter, A. G. Ritchie, all of Toronto.

#### HOW TO MAKE PLUMBERS' SOIL.

Editor Questions and Answers.—Although you may have printed it before, I wish you would publish a recipe for plumbers' soil and oblige,

A Reader.

Glue, lampblack and water are the constituents used. Boil the glue in water until it is dissolved thoroughly. This mixture should not be too thick. Then stir in the lampblack until it is about as thick as paint. Now heat the mixture slowly for about half an hour. When cool try it out on a piece of lead pipe. Should the black rub off easily, add more glue until the black holds well. A good many plumbers use common shoe blacking in the place of plumbers' soil, finding that it answers their needs as well, or better than the soil.—D.C.H.



# An Attractively Planned Showroom

Illustrations Showing the Business Premises of C. T. Bull, St. Thomas—Has Been in Business for 17 Years—Carries a Stock of Fixtures and Does Electrical Work—A Suggestion re National Convention.

ONE of the most attractive plumbing and heating showrooms in that section of the province is that of C. T. Bull, Hiawatha Street, St. Thomas. Mr. Bull moved into his new quarters in the fall. The accompanying illustrations show the creditable arrangement that he has put into effect.

The showroom is 22 feet wide by 24 deep. The floor space is made good use of for the display of bathtubs, lavatories, and sinks. It will also be noticed that a stock of electric and gas fixtures is kept. The office is at the back of the showroom. Behind that again is the workroom, running to a depth of 42 feet.

Mr. Bull has been in business for himself for 17 years. He is a firm believer in association work, and was a delegate at the recent convention of the Ontario Society of Domestic Sanitary and Heating Engineers.

Mr. Bull has found that it pays to carry fixtures and look after electrical work. It has proven a valuable side line in many ways. He handles quite a large stock of fixtures, and has worked up a good connection.

While in Toronto at the Good Friday convention, Mr. Bull paid a visit to the office of Plumber and Steamfitter. He stated that he was anxious to make the trip to Calgary this summer to attend the national convention, and advanced the suggestion that, if a sufficient number from the east were going, it might be possible to charter a special coach, or even a special train. The idea is a good one, and is commended to the at-

tention of the officers of the Canadian Society of Sanitary and Heating Engineers.

lowered lights an electric lamp in the telephone cabinet or can be turned to either side to get the natural light. It



A View of the Showroom of C. T. Bull, St. Thomas, Taken from the Front.

## Invents Clever Device.

Hamilton, Ontario.—W. J. Walsh, plumber, has invented the Wall Open Book Rest, on which he and others have secured the patents in the United States, Canada, Great Britain, and nearly all the European countries. R. H. Robinson, manager of the local branch of the Canada Life Assurance Company, and A. M. Bruce, of St. Thomas, a manufacturers' agent, are part owners of the invention, and are at present engaged in organizing a company to manufacture the rest. It is expected that it will locate in this city. The invention is for the use of telephone directories, and is in the form of a rack which, when not in use, rest against the wall, and when

works so that the directory is always open, and can be handled with one hand while the person is using the telephone.

## Better Regulations.

Toronto, Ont.—Ten new inspectors will be engaged by the Board of Health in addition to the four now on the staff. They will be assigned to specific districts and will be responsible for their condition. In the more congested sections there will be inspections twice a week, while in others they will be once a week or once a fortnight, as the conditions require. Dr. Hastings holds that the only way to make the conditions satisfactory is to have constant inspection instead of the irregular inspection, or mere response to complaints. The new housing by-law is nearly ready for Council.

## SHOULD BE TRAPPED.

Editor Plumber and Steamfitter.—Being interested in the articles on sewage disposal I should be pleased to know if the syphon shown on sketch would work satisfactory. Thanking you in anticipation of reply, I am, yours faithfully.

T. Knapton,  
Thornhill, Ont.

March 7.

To insure efficiency, the lower end of the syphon should be trapped as shown in Figure 1 of third article of the series.

C. W. C.



Another View of the Showroom, Taken from the Rear.



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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TORONTO, APRIL 15, 1912

TO STATE that the annual convention of the Ontario Society of Domestic Sanitary and Heating Engineers was a success is to state it mildly. The attendance was larger and more representative than the directors, even in their

### A MEMORABLE CONVENTION.

most sanguine moments, had anticipated. Practically all the larger centres in the province were represented and, now that a salaried secretary is to be appointed, the other cities should be brought into line in no time. One of the most gratifying features was the large representation of members from the smaller towns, evincing a healthy interest in the trade, and pointing to the certainty of a permanent success if the organization is continued along the same lines as followed in the past.

Considerable business of an important bearing was taken up and expeditiously dealt with. The most vital matter, possibly, was the decision to appoint a salaried officer, and to set aside \$1,500 for the maintenance of that office. The obligation assumed is not a light one, but there is no reason to believe that any serious difficulty will be encountered in financing it. At any rate, the directors have announced their intention of making the appointment at once.

The wisdom of this step cannot be doubted. With the permanent secretary to keep matters stirred up, the organization of all provincial points will be expedited, and, when the next convention rolls around, the result will be seen in a largely increased membership. It is not taking too optimistic a view to state that the increase in membership should cover the expenses of the office.

No time should now be lost in drawing up the examination forms and seeing that the members prove their eligibility by passing the test. The committee in charge have a big task ahead of them, and should lose no time in getting down to work.

THE DEATH blow to the "tipping evil," which the Commercial Travelers' National League of the United States has been directing its energies to abolish, may be struck if the latest plan formulated by that body is carried into effect. At a recent meet-

ing of the officers of the organization, **TO ESTABLISH TIPLESS HOTELS.** W. E. Adams, of Philadelphia, vice-president, offered a resolution calling for the formation of a stock company which will operate a chain of "tipless" hotels in more than one hundred leading cities of the country.

To accomplish this he suggested that each traveling man invest \$10 and all houses employing commercial travelers \$100 each, thereby providing a capital stock in excess of \$10,000,000, which would be sufficient to operate

a number of hotels to which traveling men could resort and escape the "tipping" nuisance.

THE FREIGHT blockade is creating a situation in commercial circles which cannot be regarded as otherwise than extremely serious. Dealers report that consignments of goods which were shipped as early as the first of last month have not yet reached

### THE FREIGHT CONGESTION.

them. In some cases, they are now hard pushed for supplies, which should have reached them weeks ago. If warm weather develops soon, the situation will be a serious one. Many merchants will not be in a position to handle the demands of their customers.

Some dealers are complaining that drafts are reaching them for goods which they have not yet received—the surest kind of proof of the slowness of freight deliveries. It should be borne in mind that the wholesaler cannot in any way be blamed for the delays, and that he has no way of ascertaining when the goods he has shipped reach their destination.

SO MUCH of man's life on reaching maturity is spent in labor that it is important not only to himself but to all who come in contact with him whether he be in the shop, on the road as a salesman or in the office in charge

### CONGENIAL OCCUPATION.

of an enterprise, that the endeavor be spent on that which is congenial to him. If a man is a working mechanic he owes it to himself to give some time to reflection on what his talents are best adapted to, and then, even though at first he may have to go somewhat against the current to find the right place, he may rest assured that success will come to him more readily if his heart is in his work. If the salesman on his visits is coming in contact with the wrong people and is forced to dilate on a line of goods in which he finds little natural interest, his success will be but meager as compared with what it would be if he could give some time and thought to the line which he would be better adapted to sell and for which he has a natural liking. If through any circumstances a man finds himself at the head of an enterprise in which he finds little pleasure, and it is a constant effort for him to rise to the exigencies of it, this state of affairs may be the explanation of the unsatisfactory returns from the capital he is managing. It is very important to the business man that in addition to having the ability to manage the details of an enterprise he shall also find pleasure in its exactions, whether they be of a personal or a scientific character. That man is a slave who is forced to labor in a field which is distasteful to him.—Metal Worker.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

Spring is here. To none does this season cause greater rejoicing than to Joseph Thibeault, of Lagauchetiere Street, Montreal. It is not only that the spring brings a revival of plumbing activity. It is not only that Mr. Thibeault, like all others members of the human race, delights to feel the blood tingle in his veins. It is more than this. To Mr. Thibeault spring means yachting, and yachting to him is the embodiment of enjoyment. True the handling of boats is not Mr. Thibeault's only amusement. He swims and he rides—and in common with all other Montrealers he chases street cars about the mystic hour of six o'clock. But these things are merely side lines—yachting is the great interest is Mr. Thibeault's life—providing of course work be overlooked for the time being.

## In Business Thirty-five Years.

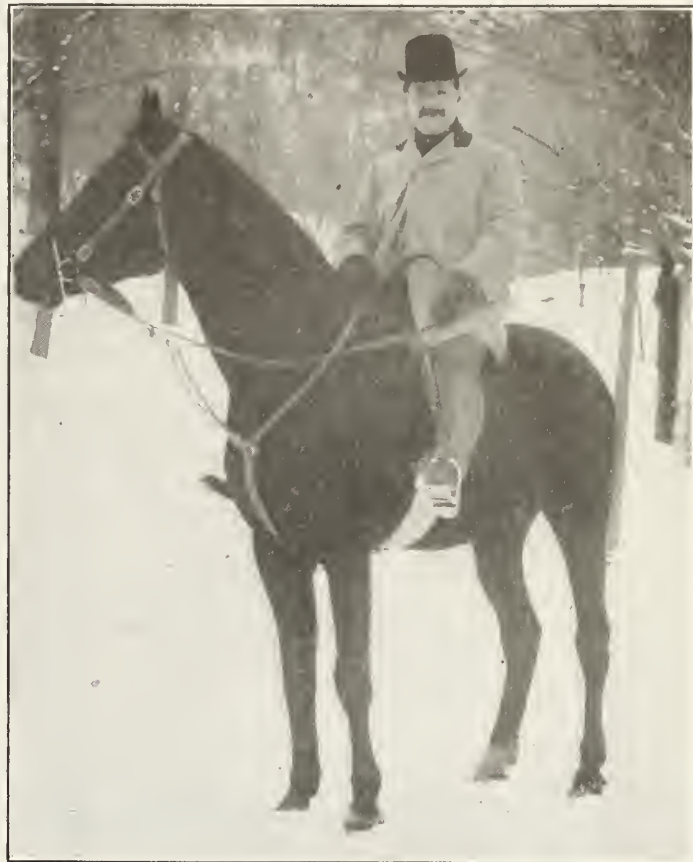
It is thirty-five years ago since Mr. Thibeault entered the plumbing business in Montreal. At first he had a store down on Craig Street. At that time the district in which his shop is now located was one of the fashionable residential sections of the town. But the passing years have brought changes, and that site on Lagauchetiere Street, near Beaver Hall Hill, is now well fitted for the place of business of a sanitary engineer.

But Mr. Thibeault does not spend all his time in his office. Indeed after one has called for him six or seven times and has on each occasion been informed that Mr. Thibeault is out, it becomes very evident that this man believes that if business does not come to him it is good for him to go after the business. He perhaps formed this aggressive system when times were not so good as they now are, and having formed the system he can see no reason why it should be discontinued.

## The Crowning Honor.

Mr. Thibeault has always taken a great interest in association work, having been president of the National as well as the Local Association. He has been an active organizer, has been banqueted—in fact, has won the esteem of all his fellows. But the crowning honor came in February, when at the annual plumbers' euchre and ball Mr. Thibeault was one of the four deemed fit to punch the tickets. He was true to his task, too, refusing the entreaties of the young ladies to make two punches appear where only one should be. A hard hearted man was Mr. Thibeault.

But back to the open air, which is the place where all should be at this season, and which is undoubtedly the place



Mr. Thibeault is What They Call in Good Old England a Hard Rider. He Likes Jumping Fences and Chasing Across Rough Fields.

where Mr. Thibeault is seen at his very best. The river has not broken up yet. Lake St. Louis is not yet free of ice. It will still be some weeks before sailing will be possible, but among the first crafts on the lake will certainly be Mr. Thibeault's "Annetta" or his "Owl," or one of his other yachts. And at the tiller will be Mr. Thibeault. He is a member of the Royal St. Lawrence Yacht Club, and is recognized as one of the best skippers belonging to that organization of good skippers.

## A Saver of Lives.

Of his sailing trips, of the victories of the Owl, Mr. Thibeault delights to speak. But there are other achievements upon which he remains rather silent. It was twenty-five years ago that a great storm swept Lake St. Louis, capsizing a number of yachts. It was Mr. Thibeault who then sailed out, and rescued from the top of an overturned craft a man and two women.

For a somewhat similar service Mr. Thibeault has since been honored by the Royal Humane Society—but the exact facts are hard to secure. Mr. Thibeault switches the conversation.

To the mind of all yachtsmen, yachting in Canada has but one fault—it can not be enjoyed the year round. They rather resent the winter, which to them is a weary period of inactivity. Undoubtedly Mr. Thibeault would feel something like this had he not taken steps to provide against any off season. He has underwritten the winter season from an amusement standpoint, having taken to horseback riding.

## A Hard Rider.

There are all kinds of horseback riders and many styles of riding. Mr. Thibeault is what they call in good old England—a hard rider. He likes jumping fences and chasing across rough fields. Sailing comes first, but horseback is a good second, and Mr. Thibeault is one of the most enthusiastic members of the Club de Chasse a Courre Canadien. How he finds time to enjoy all these sports and to carry on his large business is somewhat of a puzzle, but find time he does. Moreover, he is doing his share to make the Canadian Society of Sanitary and Heating Engineers more powerful and more useful.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

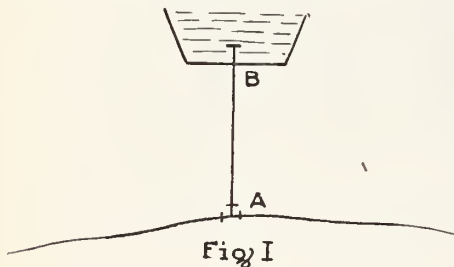
## TO GET AIR OUT OF SIPHON LINE.

Editor Plumber and Steamfitter.—I have a long line of pipe working as a siphon. It raises the water about twenty feet and frequently refuses to work. How can I fix it so that it will work all right?

JOHN RANSER.

Your line probably gets air bound. You can arrange as per drawing shown by Fig. 1.

At the high point of the line make an air chamber (shown by pipe "A-B") This should have a fitting and a plug in-



side the vessel. At both the inlet and outlet of the siphon place a shut-off. When siphon refuses to work, shut off the valves and pull out the plug in the vessel. The air will then escape and the line filled and the plug put in. Upon then opening the shut-off valves the line will start running and continue until the air accumulation causes it to cease running. It is a convenient way of relieving air bound lines of this description.—D. C. H.

## REPACKING AN UNMOVABLE FLANGE UNION.

Editor Plumber and Steamfitter.—How can I, without too much effort and expense, repack a flange union when there is no room to spring the pipe and separate the faces so that the union can be thoroughly cleaned? An answer will greatly accommodate.

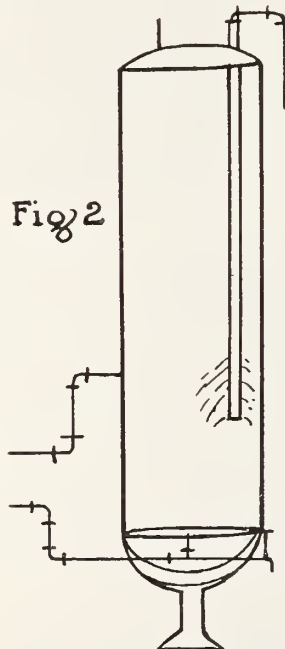
S. E. BUELL.

Secure the main so it can't pinch together any when you get the old rubber gasket out. Remove the bolts and then take an old saw and begin at the top of the flange sawing down. It will be found that the saw will chew out the

rubber and at the same time clean the face of the flange. In putting in the new gasket tie a string to it and lift it up into the flange which you have braced open before starting. You can repack a very obstinate flange very quickly by following the method described.—D. C. H.

## A REMEDY FOR MUDDY WATER.

Editor Plumber and Steamfitter.—The water in a certain range boiler gets quite roily and gives lots of trouble in spite of the fact that it is



frequently cleaned out. Is there any remedy you can suggest that would possibly prevent this state of affairs?

J. H. DAILEY.

The subscriber might cap the end of the cold water supply pipe inside the range boiler and punch the pipe full of holes as shown in Fig. 2. This would throw the water away from whatever sediment there was in the bottom of the range boiler, and avoid stirring it up every time that water was admitted to the boiler.—D.C.H.

## AIR TANK FAILS TO HOLD.

Editor Plumber and Steamfitter.—A recent job put in, air pressure water works, fails to hold the pressure for more than two hours. There is no way to close it down when done pumping. Can you tell me what is the matter?

DISSATISFIED.

There's either a small leak somewhere, or else no valve between the check valve and tank. If the job is perfectly tight, a gate valve placed where we mention should fix it.—D. C. H.

## SAVE BILL FOR NEXT YEAR'S SMOKE PIPE.

Now that the season is at hand when the heating plant will soon be out of commission, do not allow the boiler to remain full of soot and ashes until next fall. Let us clean it and put job in order.

Mr. Plumber: Paste that in your front window. Then do the work. Don't put the smoke pipe back on the boiler. Wrap it in newspaper (after cleaning thoroughly) and store it in a dry place until cold weather. You can save it for the owner for several years by so doing.

## HORSE POWER AND RADIATION.

Editor Plumber and Steamfitter.—Will you tell me how many feet of radiation one horse power is equal to and oblige.

Reader.

It is said that a horse-power represents the condensation from one hundred square feet of direction or about ninety square feet of pipe radiation. A horse-power, by the way, represents the energy which is developed by evaporating 2.65½ lbs. of water into steam.—D.C.H.

## CAN ACETYLENE GAS BE USED FOR COOKING?

Editor Plumber and Steamfitter.—A customer asked me yesterday if acetylene gas could be used for cooking purposes, and I could not answer. Will you be kind enough to tell me

through the columns of your valuable Questions and Answers Department?

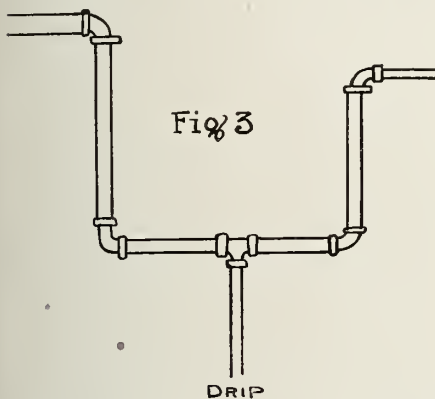
M. J. M.

It can not be used with the burner that is on the ordinary gas stove, because it will soon stop up. Also the acetylene and air will ignite below the burner, that is flash back. To prevent this a special burner must be made so constructed that the burner does not become hot enough at any point to flash back. Such burners may be purchased, but it is said that the use of the acetylene gas for cooking purposes is somewhat more expensive than the ordinary commercial gas. However, if one's house is equipped with acetylene gas, we believe that with a little care, it could be so operated that its cost would amount to but very little more than the commercial gas in ordinary circumstances.

D. C. H.

### HOW TO "BLEED" MAINS.

Editor Plumber and Steamfitter. — I send you a rough sketch of the way I dripped two steam mains by tying them



together. Is this the best way? If not please illustrate.

J. Q. C.

The manner in which our correspondent tied the mains together is shown in

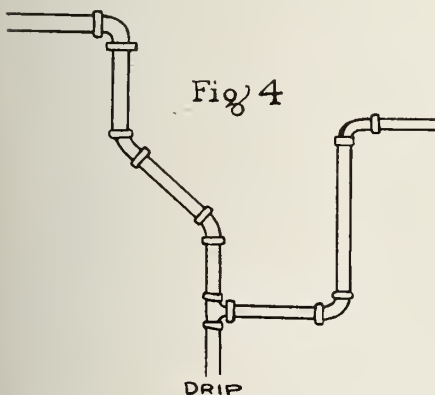
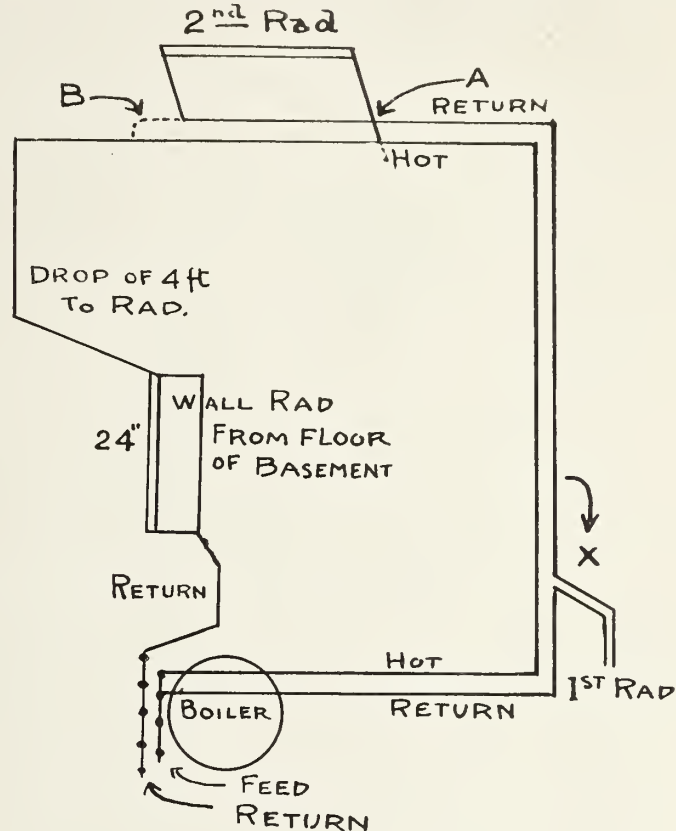


Fig. 3. We present that a better way would be as shown in Fig. 4, which we publish for our correspondent's benefit.—D. C. H.

### RAD. IN BASEMENT.

Editor Plumber and Steamfitter.— We are sending a rough sketch of manner in which a customer would like a wall rad. connected in basement of a bungalow, which will be used as a dining room. The return will have to go below the basement floor as there is a door to pass between rad. and boiler.



Will it work that way? If not, can you give a sketch of a better way?

G. A. F.

Connected for hot water and with the expansion tank at least a foot above the highest radiator we believe the radiator would work all right. Why use the return pipe from "X to A"? Why not pass the water through radiator No. 2 and thence on to the wall radiator as shown by dotted line "B"?—D. C. H.

### GASOLINE STOVES NOT DANGEROUS.

Editor Plumber and Steamfitter.— Would you regard a gasoline stove as a dangerous proposition in a gasoline house lighting plant? A customer I have been trying to land in a plant seems to lack nerve and I would like your opinion.

G. E. W.

Either the stove or the plant might become a thing of danger in the hands of a careless or inexperienced person. So might an ordinary coal stove, the gas from which has suffocated many persons in the last 25 years; yet one hardly ever hears of coal stoves being regarded as

dangerous. To our way of thinking either a gasoline plant or a gasoline stove is no more dangerous than a coal stove, providing always the party operating the same understands their proper usage and if they don't why then you have the chance to perform a little missionary work along the educational line and "show them."—D. C. H.

### WHY SOLDER DID NOT STICK.

Editor Plumber and Steamfitter.— The other day I had occasion to do some soldering on galvanized iron and when done I noticed that some of the work did not stick. Will you tell me why?

C. P. R.

The most probable reason we can think of is that you tried to solder too much at each heat of the iron. Even with the most careful preparation this is frequently apt to be the case. The solder clings to the surface of the zinc and will peel off. Use a hotter soldering iron and you'll probably come out all right, if the other preparations have been rightly made.—D. C. H.

### A New Company.

Toronto, Ont.—A new company has been formed here to be known as Read-Frankland Limited. The members of the firm are Albert Read and Garrett Frankland, both well-known in the trade. The latter is secretary of the Ontario Society of Domestic Sanitary and Heating Engineers.



# Complete Course of Sheet Metal Work

By L. W. KOSER

If the metal worker has practiced and studied the preceding plates he will by this time have become fairly familiar with a square mitre, or mitre at right angles. This is by far the most common mitre used. It often becomes necessary, however, to make a mitre at other than right angles, and for this purpose we employ what is known as the "mitre line" method.

We will suppose that the metal worker has a job of eavetroughing to do, and the corners on the building are at different angles, some being square or right angles, some being sharp or acute angles, as Fig. 3, plate 8, and some being obtuse angles as Fig. 5.

We first lay off the roof line, or line of eave or fascia board, where trough is fastened to; this is shown by the dotted lines A, B, C.

Then draw the shape or profile of trough as shown, having the back part of trough against roof line, and the outside or beaded edge projecting out from the roof line the same distance it would project on building.

Then draw the outside line which represents the projection as shown by the lines E, F, G, and draw the mitre line F, B.

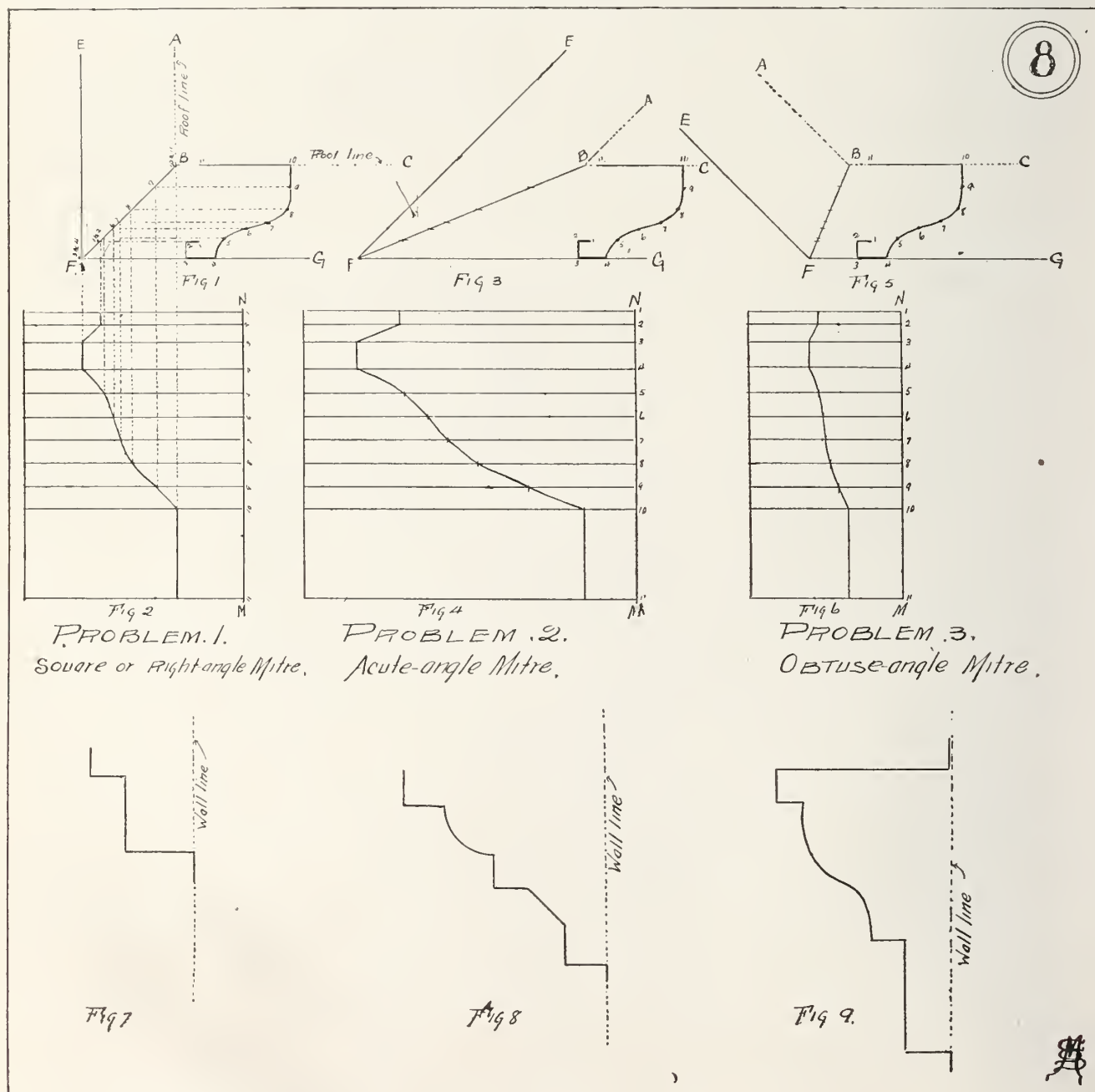
Now divide the profile into the different parts and number each.

Lay out the stretchout at right angles to the line B, C and F, G.

When drawing patterns by the "mitre line" method always have the stretchout line N-M at right angles to the line that the profile is drawn on. For instance, the profile on Fig. 1 is drawn on the lines B-C and F-G, so that the stretchout line would be at right angles to these lines.

With the T-sqr. placed parallel to the lines B-C and F-G carry a 1 line from each number on the profile to the mitre line F-B, and number each the same as on the profile.

Then with the T-sqr. placed parallel to the line N-M, drop a line from each of



the points on the mitre line to the measurement line having the corresponding number.

A line traced through these points gives the desired pattern.

Problems 2 and 3 are drawn the same as problem 1, the only difference being, that as the roof line is at a different angle, the mitre line is necessarily different, but the principle is the same.

For practice draw Figs. 7, 8 and 9 at each one of the different angles shown by Figs. 1, 3 and 5.

On plate 7 we show the method of developing the pattern for one side of a square ornament by dropping the points direct from the elevation to the stretchout, and on plate 8 we show the use of the mitre line.

The method outlined on plate 7 applies only to square or 4-sided figures. But where the figure has more or less than 4 sides it becomes necessary to use the mitre line method.

As this method also applies to the 4-sided figure, and as this is probably the easiest to understand, we will develop the pattern for a square ornament, and as before mentioned, as either way can be used we will develop the pattern both ways to show that the results are the same in each case.

On plate 9 Fig. 1 is the elevation of an ornament which we desire to make four-sided.

Fig. 4 shows the pattern developed as described for plate 7, the only difference being that in this case the stretchout is placed directly above the elevation instead of directly below it as on plate 7. The student can easily see that this makes no difference, as the parallel lines are of course the same distance apart whether carried up or down.

Having drawn the elevation Fig. 1 we will draw the plan Fig. 2. This is an outline of the base of Fig. 1. Its sides A, B, C, D, being equal to the widest part of Fig. 1 as S.S.

Draw a line from the corner B to the corner C and from the corner A to the corner D, thus obtaining the mitre lines.

The centre O must be directly below the point 1 on the elevation and the side B, D must be parallel to the centre line O.P.

Now lay out the stretchout line N.M. at right angles to the line O.P.

Transfer the stretchout to this line, number same and draw the usual measurement lines through each number.

Now place the T-sqr. parallel to the centre line of Fig. 1 and either drop a line or make a mark on the mitre lines O.B. and O.D. directly below the numbers on the elevation.

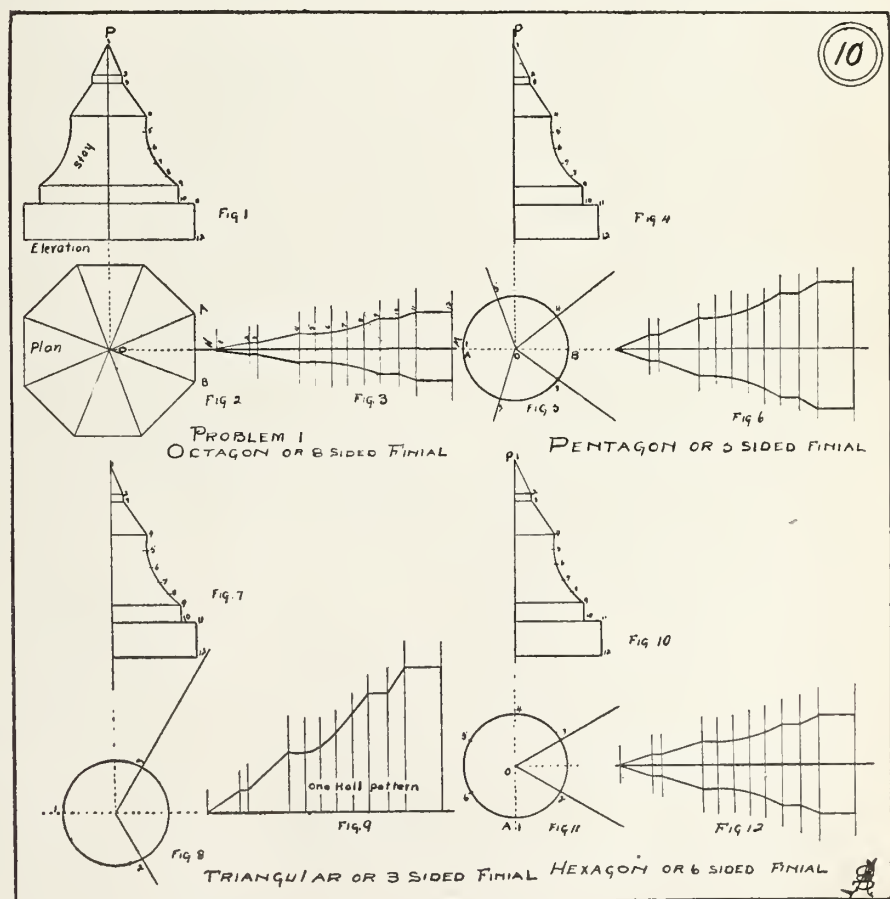
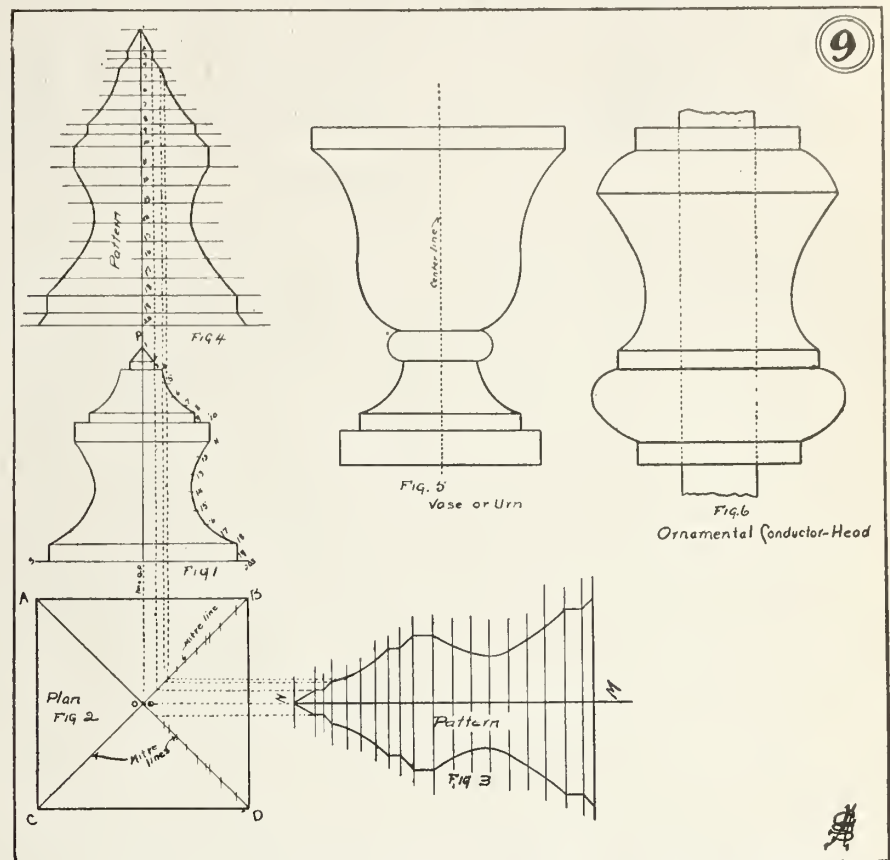
It will be found necessary to rub out the mitre lines O.B. and O.D. and draw

fresh lines during the operation, as otherwise there would be so many marks on the mitre lines as to cause confusion.

Trace a line through the different

points on the stretchout and the pattern will be developed.

It will be noticed that the width of (Continued on page 22.)







# POINTS ON HEATING

by CHAS. H. DENISON



## A Blunder Which is Frequently Costly.

They who make this mistake know better, generally, yet continue on year after year trying to condense space and make it do the same work with only about sixty one-hundredths of the chance for fair play. A few days since I saw a steamfitter's helper walking down the street carrying a galvanized smoke pipe under his arm and rusing (?) to get back on the job. As I leisurely passed him I looked the smoke pipe over. One end of it was about two or more inches larger, in diameter, than the other. At a guess I should say it was reduced from nine to seven inches where it entered the chimney.

Now, the chances are about ten to one that the steam heating contractor knew that it was plumb against all sense and reason to reduce the smoke pipe two or more inches in diameter, yet he did it and never batted an eye. Took the chance when he knew almost absolutely that he'd get left. Why do men who have been in the business for years do such silly things? "Sure it'll work. That draft will pull a cat backwards up the flue," they will say. But when the job is fired up it don't work.

To continue, I thought I'd see the outcome of this job, and as I knew just where this helper was working I visited the job about a week after the fitters left. The owner said: "It works all right when we can get up steam enough, but we have to turn on all the drafts and poke the fire so much, also the boiler belches out gas quite frequently. What is the matter?"

I did not tell him, but suggested that he have the fitter call and give it a good test out. "Make him fire the boiler himself and he'll probably learn the difficulty," I advised, for I didn't want to "knock." They put on a larger smoke pipe, finally, and the job was then all right.

Here is a rule if you must have it. Don't allow the smoke pipe or chimney to have less capacity than what the collar on the furnace calls for. Even then, if the chimney lacks height, you may have trouble. I remember a very costly incident which took place, not so long ago either, in which the contractor paid

something like \$125 for his bullheadedness.

He insisted that a very tall chimney on a public building be tiled. Then he had the smoke pipe nearly all made and slapped the boiler and beating job in mighty quickly. It was brought to his attention that he had cut down the draft from 20 inches to 16 inches and that the result might not be all that was desired. He scouted the idea. "Why that flue is 75 feet high and would pull a train of cars up it," he exclaimed. "Go ahead, I'll gamble on it," he told the foreman. They did; he gambled, and lost. When the boiler was fired up they couldn't raise a pound of steam on the job to save their blessed lives. Coal, coke, lightwood, plenty of oil were in vain tried out and but a few ounces of steam resulted.

After a week's vain trial the fire was let out and a man started at the chimney and cut out the tile with a cold chisel.

A new smoke pipe had to be made, placed and covered with asbestos. Then the job was fired up and in less than one hour the gauge registered ten pounds of steam.

When the contractor was asked why he made such a blunder he replied, "I thought the thing'd work."

He thought it would work when right in his mind he knew better.

If this, or these rather, were the only two cases, I would never have mentioned them; but it happens right along lay in, day out, season after season.

Don't cut down the draft. You know better, then why do a job you know must fail? Quit guessing, figure capacity and figure it to work.

## TO REMOVE OBSTRUCTION.

Editor, Plumber and Steamfitter.—There is a septic tank here which discharges through a 6-inch glazed tile into a sewer, and this tile has become blocked up through the syphon freezing and some solids running over the air space between the two tanks. Will you kindly inform me through your paper how to remove the trouble without raising

the tile, as it would be an awful job to dig them up at present?

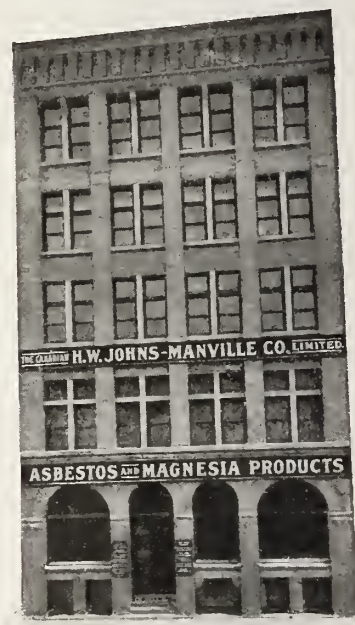
A READER.

I can see no other way out of the difficulty than to take up the tile pipe to remove the obstruction. So far as the working of the tank is concerned, if "Reader" can furnish a rough plan of same, we might be able to give some further information.—C. W. C.

## MOVE TO LARGER QUARTERS.

Increased business in the sale of J.-M. Asbestos, Magnesia and Electrical Supplies, throughout the territory covered by the Canadian H. W. Johns-Manville Co., Limited, at Winnipeg, has necessitated a move from their old quarters at 320 Main Street to 89 Princess Street.

The new building shown in the accompanying illustration will enable a much



larger stock of goods to be carried on hand than heretofore. Mr. M. C. Burgess, who has been a resident of Winnipeg for many years and is well and favorably known in that section, has charge of this office, and under his supervision is a force of nineteen men.



# Methods of Sewage Disposal

By Charles W. Chandler, Toronto.

For many years it has been recognized as an indisputable fact that sewage must undergo a clarifying process whereby the whole of the suspended impurities shall be removed and up to almost a recent date the process of precipitation, as the preliminary treatment, has been the one most widely followed. Whatever the process of chemical purification to which the sewage is subjected, the effluent is still impure and will putrefy and give off noxious gases if kept for some time and the only way in which the purification can be completed is by oxidation. As pointed out in the previous articles filtration through cultivated land, i.e., irrigation or intermittent downward filtration, is the best means. But oxidation of the effluent may in a few cases be effected by the simple and natural process of running it into the nearest watercourse, when, if the proportion of clear water be sufficient, the organic matter will be gradually oxidized and the effluent water will not become putrid or offensive in any way, even in warm weather. Up to a certain point, some rivers can most certainly complete the purification of sewage, and even free themselves entirely from their temporary pollution, solid refuse excepted. There is a proportion which some rivers may carry without being appreciably injuriously affected. It may be difficult to ascertain what that proportion is, but so long as it is not exceeded, no nuisance will arise. Experts have declared that the river Amster in Holland has septic qualities which make its use as a sewage outfall no menace to the health of Amsterdam.

The sewage sludge is the troublesome, not to say dangerous, element in all precipitation processes, especially that from lime precipitation, which changes more rapidly than that produced by the action of alumina or oxide of iron. The first and absolutely essential preliminary to the adoption of any method of treatment by precipitation is to arrange for the systematic removal of the sludge from the works. To begin sewage treatment without this is to end in the creation of a gigantic nuisance and become lost in an almost hopeless struggle to suppress it.

Sewage sludge may be disposed of in different ways; it may be discharged into the open sea, or it may be compressed into portable cakes; or it may be used to make up waste land, or it may be dug into the ground, although the manurial value of sludge is now admit-

ted to be low, and, except in a few isolated instances, sludge is recognized as a material to be got rid of in the cheapest manner.

It will readily be seen that the system of precipitation has its great drawback in the treatment and disposal of the resident sewage sludge and therefore the more recent and more scientific process of fermentation or putrefaction by means of septic tanks whereby practically the whole of the solid matter is reduced to a liquid by bacteriological action, has practically superseded the earlier forms of precipitation tanks and sludge works. The septic or fermentation treatment of sludge may be considered a biological rather than a chemical process, as the success is dependent upon presenting conditions which favor the rapid growth of certain bacteria, which effect the complete reduction of sewage, bringing it into a harmless state in the form of nitrates, which plant life can take up.

## The London System.

It has been said that the London (Eng.) sewerage system is the finest in the world—a phrase easy to frame but hard to prove. The claim is not made by the engineers of the London County Council, who recognize the faults and limitations of a system whose construction has covered a period of fifty years. London is too big to make possible a complete change in the system for each new discovery of science. Being committed by the work of half a century and the expenditure of millions of pounds on the precipitation system, obviously it would be impossible to adopt the septic tank, which is the method of sewage disposal most approved by sanitary experts at the present time. But already the London Council has begun experimenting along this line, with a view to finding, if possible, still further means of purifying the Thames, which is yet far from being free from pollution. The crude London sewage treated in one year was 87,556,007,031 gallons; lime used 22,008 tons; protosulphate of iron, 5,519 tons; sludge sent to sea, 2,620,000 tons. These figures show that the main drainage system of London is undoubtedly the greatest in the world, if not the most perfect; a claim that ought more easily be upheld by some young town of less than one-tenth of the population of London, and with less than one-tenth of its problem.

As already pointed out there is a difference in the composition of town sewage and that from isolated houses. Town

sewage is apt to be more diluted, particularly after rainstorms. It is also often diluted by in-leakage of subsoil water, and it is nearly always mixed with trade and manufacturing wastes. It contains a good deal of inorganic or mineral matter, silt and street sweepings. In very long main sewers some septic action takes place tending to liquefy suspended matters. On the other hand the sewage from isolated buildings, when delivered at disposal works, is generally fresh sewage, because the run of the house sewer is a short one. Preliminary sewage treatment has in some cases been accomplished under aerobic conditions by means of coarse filter contact beds, intended to arrest and liquefy suspended solids. Such coarse sewage beds are, however, very apt to clog with fibre, lint, disintegrated paper and other suspended matters and it is now considered a better practice to remove the suspended solids in scum, septic or cultivation tanks. It may here be mentioned that for plants for isolated buildings a grit chamber to arrest suspended matters is not usually required. The septic tank proper differs from the cultivation tank and from coarse bacteria beds in not having any material such as broken stone placed in it to furnish suitable surfaces for the growth on cultivation of bacteria, but both the septic and the cultivation tanks are the same as regards the anaerobic conditions maintained in them.

The cultivation tank, as first designed by Scott-Moncrieff, consisted of a watertight covered chamber of suitable size, with a smaller separate inlet chamber, the two being connected at the bottom by a suitable channel covered by a grating or by perforated plates. On the top of these large broken stones are placed in the tank. The sewage passes downward through the inlet chamber and thence upward through the grating into the cultivation tank. There is an almost continuous slow flow through the tank, and the liquid escapes from the latter at the top by means of an overflow pipe located at the normal water level. The object of the filling material was stated by the engineer to be to increase anaerobic conditions by affording plenty of resting places for bacteria.

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## Start in Business.

Battleford.—Capstick & Bronson have started a plumbing business here.



# Fine Show Rooms for Sanitary Ware

Standard Ideal Opens Fine Branch in Montreal — Alexandra Ware and Regular Ware Tastefully Shown—Two Fully Equipped Bathrooms are Installed—Finish of the Rooms Rich But Simple, in Entire Good Taste.

The past decade has brought a great change in the appearance of Beaver Hill Hall, Montreal. Fashionable residences of the stately type once stood along this much frequented thoroughfare, but now the Hill has practically ceased to be a residential section. It is given over largely to the offices of architects. The site is peculiarly suitable for these, for builders, contractors, and others with whom architects do business daily pass down that hill. It is one of the great ways to the downtown business section. To drop at an architect's office on Beaver Hill means practically no delay for a business man.

## Offices That Dovetail.

The district being one for architects, naturally becomes one for those doing business in lines needed by contractors. There is little wonder, therefore, that the Standard Ideal Company sought a location in this district. The location they secured on a ten year lease, and an old-fashioned stately stone residence has been transformed into one of the finest show rooms for bath room fixtures that can be imagined. J. J. Laferme, the company's eastern sales manager, knew what he wanted, and Joseph Wechselberger, who made the designs, evidently

fully grasped the needs. He designed a floor which presents remarkable features

for display, and the walls, the ceilings, and the entrance are made to harmonize beautifully.

Entering the door—at each side of which are ranged tile panels which are really works of art—show room number one comes into full view, with just a glimpse of show room number two and of the offices behind. This first room is devoted especially to a display of Alexandra ware. Its walls and ceilings are Ionic in style, the panels being brightened by leaded mirrors—mirrors which both reflect the fine ware shown on the floor and give a more accurate idea of the appearance the various wash stands would present in a fully equipped bath room.

## Marble Steps Between.

All the metal work used in the decorations of this show room are in green bronze.

An Ionic colonnade and marble steps lead from show room number one into show room number two, which is devoted to the regular ware. The mural decorations here are of two shades of blue, trimmed with pear gray angle moulding. At the extreme end of this second show room are equipped two Alexandra ware bath rooms, one on either side of the



Room in Which Enamel Ware is Displayed—Glimpse of Two Completely Equipped Bath Rooms May be Caught at Either Side of the Office.



Full View of New Show Rooms—Notice the Careful Arrangement to Avoid Overcrowding.



general office. These bath rooms are entirely tiled, and are fitted as though ready for use.

One especially interesting feature in this second show room is the lighting fixtures. These are all of white enamel, matching perfectly the fine whiteness of the sanitary ware.

## Art Room Above.

Behind the general office is Mr. Laferme's private office, running the full width of the building. From this a flight of stairs leads to the Standard Ideal Company's art studio, from which all the art work and catalogue designs originate. So from front to back it is



"The Steel Workers." A Beautiful Tile Panel Shown at Side of Entrance to the Standard Ideal Company's New Montreal Show Room.

seen that the highest degree of utility as well as the most beautiful effects have been secured.

One of the striking features of the whole show rooms, and one which might

welcome, Mr. Laferme states, to bring his customers here, so that they may see a wider variety of goods than can possibly be carried in a retail establishment.



Exterior View of the Standard Ideal Company's New Show Rooms on Beaver Hall Hill, Montreal.

be copied by retail dealers in a smaller way, is the care which has been taken to show each fixture as it would appear in the building. Space has been left between the various fixtures so that customers will not become confused looking over the stock.

These show rooms, by the way, are not only for the Standard Ideal Company. The intention is to have them wide open to the trade. Any retailer is

## Dissolved Partnership.

Calgary, Alta.—McClure & Knapman, plumbers, have dissolved partnership. S. Knapman is to continue the business under the name of the Standard Plumbing and Heating Co.

## Want More Pay.

St. John, N.B.—The Plumbers' and Steamfitters' Union have asked that after April 8, a new schedule go into effect. They are asking for \$3 a day.



# New Brunswick Association Formed

A Large Gathering Held at St. John, N. B. Results in Formation of the New Brunswick Association of Sanitary and Heating Engineers—Efforts will be Made to Secure Legislation—A Banquet Held in Evening.

St. John, N.B., April 11.—There is now a provincial association in New Brunswick. It was formed this week at a very successful and largely attended two days' convention conducted in St. John on April 9 and 10, with master members of the trade in attendance from all centres of the province, deeply interested in the welfare of the newly organized body. The local associations of master plumbers in Moncton and St. John have been greeted with encouraging success in their endeavors to advance their mutual interests and it was thought that with greater union there would be greater strength so the idea of a provincial organization suggested itself with the consequence that before long arrangements were completed for the holding of a convention in this city terminating in the formation of the "New Brunswick Association of Sanitary and Heating Engineers."

The convention was largely attended, there being present representatives from all centres to the number of about 50. They convened on the morning of April 9 in Keith's Assembly suits and were called to order by Wm. Watson, of Moncton, provincial vice-president, of the Dominion Association, who addressed those assembled on the objects and advantages of the projected body. Through its formation, he said, the profession's interests would be forwarded in this province in the sanitary, mechanical, commercial and scientific departments, and it would serve to develop educational and creative talent among the members. He pointed out how essential it was to affiliate with the Dominion Association and thanked the representatives for their courteous attention.

With George Blake, chairman, and L. H. Estano, of Moncton, secretary, both temporarily chosen, the work of organization was proceeded with, and one of the first matters was the election of officers which resulted as follows: George Blake, St. John, president; D. F. Shea, of Fredericton, vice-president, and Peter Campbell, of St. John, secretary-treasurer. These are three experienced and capable men of recognized standing and under their guidance, and with the assistance of the members, the newly formed association should flourish in a like degree with the others in the various other provinces. They heartily thanked the others present for the honor bestowed.

Chairmen of Committees were chosen as follows:—

Sanitary.—F. S. Walker, St. John.

Legislative.—Fred Noble, St. John.  
Heating and Ventilation.—D. F. Shea, Fredericton.

Apprenticeship.—Joseph Fuir, Woodstock.

Educational.—W. J. Crawford, St. John.

Examinations.—Ely Brooks, Moncton.

Arbitration.—G. H. Dorman, Moncton.

Press.—W. J. Crawford, Fred Noble and G. H. Dorman.

A hearty vote of thanks was tendered the Moncton master plumbers for the prominent stand they had taken in forming the association and it was said that their efforts had been responsible to quite an extent for its existence.

The next convention will be held in Moncton opening on July 2. Since coming to St. John, delegates from some of the other cities have arranged for the organization of locals in St. Stephen, Campbellton, Woodstock and Fredericton, and these are each affiliated with the provincial association.

## Ask For Legislation.

A committee was appointed to visit Fredericton, the capital of the province and appear before the government asking certain legislation which has to do with the plumbing trade, relating to the holding of certificates by all master plumbers, which will be compulsory, and to compelling journeymen plumbers to pass examinations. Other plumbing ordinances will also be asked.

The committee is composed of Messrs. Noble, and Walker, of St. John; Shea, Farrell, Hurley, and O'Brien, of Fredericton; Marquis, of Campbellton; Fuir, of Woodstock, and Steaves, of St. Stephen.

## Banquet Held.

One of the events of importance in connection with the convention was the holding of a distinctly successful and enjoyable banquet in the dining hall of the Hotel Victoria, King street, tendered the visiting delegates by the master plumbers of St. John, who had some others as their guests as well. This banquet was held on Tuesday evening, April 9, and was a pleasant and refreshing session, largely attended, and a feature of the formation of the association long to be remembered by all present. A round of toasts was carried out with George Blake, the president, occupying the chair, and the programme and menu were heartily enjoyed. All the speeches were significant from the tone of optimism prevailing regarding the new association and its future, which was predicted as

being particularly bright and encouraging.

After the toast to "Our King" had been duly honored, the toast to "Our Guests" proposed, brought forth responses from John Keefie, manager of the James Robertson & Co., Ltd., and William A. McLaughlin, of the Dominion Radiator Co., both of whom congratulated the plumbers most heartily on their successful launching of the new body and wished them every possible success. Mr. Keefie in his remarks spoke of the board of officers elected, all of whom he said were worthy men and deserving of the honors bestowed upon them. He also dealt with the matter of misunderstandings which sometimes arise between the supply houses and the trade, saying that with a little explanation these could easily be avoided. He indulged in a few humorous anecdotes which were pleasingly received and thanked those present for their courtesy in remembering him.

Mr. McLaughlin thought the organization was bound to succeed and promised all possible assistance which he could give. There were many evils which had to be overcome for the conducting of successful business, and these could be more easily removed with the aid of a provincial association than otherwise. In many ways, he thought, the association would be of direct benefit to all concerned.

The "Moncton Association" was spoken to by George H. Dorman who congratulated the St. John members on the fact that the forward movement for the advancement of their interests had been inaugurated in St. John. He was proud that Moncton had had a foremost part in the formation. When the plumbers of that city some time ago endeavored to better their conditions, they found that they could best do so by means of union, and so a local was formed which has been greeted with success. The future of the N. B. Association, he thought would easily speak for what has been done. Others who spoke to this toast were L. H. Estano, F. Dixon, and Wm. Watson, of the Railroad City. They were firm in their belief that the new body would flourish and do a vast amount of good and they cited several instances wherein if a provincial body had been in existence differences might more easily be adjusted. Mr. Watson has the honor to be a vice-president of the Dominion Association of Master Plumbers and he said that he knew that



body would be greatly pleased to learn of what had been done by the master workers in the eastern province, and would co-operate to as great an extent as possible.

John Keefe now gave a Scotch song with good effect and was heartily applauded.

In response to the toast to "The Visitors," interesting speeches were made by R. H. O'Brien, of Fredericton; H. H. Marquis, of Campbellton; E. Steeves, of St. Stephen, and Mr. Wallace of Campbellton. Mr. O'Brien spoke of the necessity of organization, and Mr. Marquis and Mr. Wallace referred to the benefits to be derived and the need of a local on the North Shore, in their town particularly, where they hoped organization would ere long be effected. Mr. Steeves also spoke in similar vein of conditions in the town which he represented.

Mr. Campbell, of the Taylor-Forbes Co., was heard in response to the toast to "The Supply Houses" and predicted that it would not be long before the advantages of the association would be felt by those concerned. He thought the supply houses would be willing to lend assistance as much as possible in its interests.

Harry Doody was warmly applauded in his rendering of a solo, after which the toast to the "St. John Association" was given and replied to by George Blake, Peter Campbell, H. Dunbrach, Frank S. Walker, and H. Codner. Mr. Blake outlined the purposes for which the association was formed, namely, to promote general good feeling among the plumbing profession and with the public and to advance the interests of the members in the mechanical, commercial and other departments, as well as to stimulate and encourage creative and inventive talent and educational development. With such objects, he said the N. B. Association could not but be certain to succeed.

Mr. Campbell said he hoped the efforts to cement the good feeling existing among the plumbers would be long successful. Himself a veteran, he referred to olden times when there were bitterness and jealousy manifested by the trade towards each other, and he expressed himself as pleased that such was not now the case. The master plumbers were really coupled with the medical society in the importance of their work and through the aid and influence of a provincial association the need of the most up-to-date sanitary conveniences could the more easily be urged. Mr. Dunbrach spoke in similar strain and said he remembered when members of the trade would pass each other in the street without speaking, because of general ill-feeling towards each other, and he was happy now to know that this

was changed. Mr. Walker and Mr. Codner referred to the need of keeping the young men interested in the association's welfare and said that with their assistance the organization should be well able to keep alive.

"The Press" was acknowledged by a representative of The Plumber and Steamfitter, who was present. He

thanked the members for their courteous invitation at the same time expressing the hope that they would greatly prosper in their endeavors, and advising them that that trade journal would be always ready to espouse their cause and co-operate with their interests.

The gathering was brought to a close with the singing of "Auld Lang Syne."

## Want Only Practical Men in the Business

Montreal, April 12.—The Master Plumbers of Montreal have undertaken a big task, at least they are contemplating a big task. Whether they will be able to achieve their aim is a question. Some are hopeful, but there are others who believe what is wanted is something which is practically impossible of attainment.

In short, the Montreal Sanitary Engineers wish to exclude all but practical men from carrying on a plumbing business. At present the city by-laws require plumbers to pass an examination before they can do work, but the wording of the by-law is not clear. The Local Association would like it to mean that the owner of the business must pass the examination. But there is a doubt if this is the true spirit of the by-law. If such is the meaning indeed, that by-law has been often broken, and the Sanitary Engineer of the city misunderstands one of the very by-laws which he is paid to enforce.

### Has Harm Been Done?

Master Plumbers of the city feel that they have been harmed, and that the citizens generally have suffered by reason of the free interpretation set upon this law. They claim that many con-

tractors are establishing plumbing businesses, and that though they know nothing of plumbing themselves, they carry on this work through a skilled foreman.

Has a man a right to do this? That is the question indeed. It has been put to Mr. Dore, the Sanitary Engineer, and he stated definitely that the city cannot deny any one the privilege of entering the plumbing field, providing he engages a competent foreman to do his work. It is the foreman—or the one to have charge of the actual work—who must pass the examination, not the proprietor.

### Up Before the Council.

A year or more ago this question was thrashed out before the council. At the time there were two plumbers among the civic fathers, but they did not take the stand that a good many of the local members favored. They held with the Sanitary Engineer. The council, they said, had no right to dictate the way in which a man should invest his money. If he wanted to put it in the plumbing business, they could not prevent. All they could do was to see that the men he employed to do the actual work were competent to do this properly.

## Plumbing and Heating Markets

### MONTREAL.

Montreal, April 13.—The return of the English miners to work has had a great influence upon the market. Whereas there was a feeling of unrest there is now a feeling of surety. Advances may come in certain lines—indeed there are almost certain to be advances—but there will be no need of mills closing down for lack of coal, or for lack of raw material. At present there is a scarcity of raw material, owing to the delay in transportation caused by the strike, but relief is in sight.

The principal trouble of the manufacturers at present is caused by the car

shortage, which became more acute with the coming of spring. There is talk of steps being taken to secure better service, but it is hardly likely that any great improvement will be immediately noted. The railways simply haven't the cars. The growth in production and demand has been greater than the increase in the railway's rolling stock.

### Business Generally Active.

But despite troubles of transportation trade is generally reported as good. Enamelware is in great demand. Heating plants, usually quiet at this



season, are moving quite well; while in general plumbing the business is heavy. This is the season when houses must be put in good condition.

Prices have not changed greatly. As was stated some time ago iron pipe might be regarded as the one exception to the general tendency toward higher prices. Iron pipe has dropped in price—not greatly, still there has been a drop. American competition is given as the cause.

Enamelware.—Now many new houses are nearing completion, and bathrooms and kitchens must be equipped. From all parts, therefore, orders for this class of goods are being received. Immediate delivery is demanded, and the shipping departments are being kept busy.

#### Fear Scarcity.

Soil Pipe.—A fortnight ago a tendency toward higher prices was noted. Though manufacturers are still loath to shade at all, there has not as yet been a higher level struck. The termination of the strike has made this seem less necessary. The mills are being kept busy. There is little doubt that good quantities will be needed this summer, and the makers are anxious that they should not be short of stock.

There were a good many dealers who late last season could not get the soil pipe that they needed. They are remembering this now, and are laying in good supplies.

#### Iron Pipe Drops Slightly.

Iron Pipe.—A drop in prices of 6 to 9 cents a cwt. is noted here. The Canadian manufacturers seem bound that those producing these goods on the other side of the boundary will not get a footing in the Dominion. Conditions are improving in the States, however. The demand there is likely to become better. The price of iron pipe will, therefore, advance, which will enable the local producers to ask more. If this opportunity presents itself they will undoubtedly avail themselves of it, for iron pipe is now being handled at an exceedingly narrow margin.

Furnaces and Radiators.—Just for new buildings are these wanted now, but there evidently are a lot of new buildings.

#### TORONTO.

Toronto, April 12.—Business is now brisk and the supply houses are pretty well rushed with orders. The demand from outside points is not yet very heavy but the city trade is large enough to keep things on the move.

The settlement of the strike in the old country has relieved the manufacturers of considerable anxiety. While it would not have had any very direct detrimental effect, the industry would undoubtedly have suffered to some extent.

The unfavorable weather has had a

slightly deterrent effect, but, with the improvement which has set in during the last few days, there will be nothing to prevent the active resumption of building operations.

Enamelware.—Orders for all varieties of enamelware have been pouring in, the demand being centred largely in the city. Enquiries have also been numerous, indicating that the near future will see a still more brisk demand.

Boilers and Radiators.—There is considerable activity in heating lines, more than is usually found at this time of year. Enquiries have been exceptionally brisk. As building operations promise to break all records this year, it is reasonable to assume that boilers will be in bigger demand than in any previous year. "It is rather early in the year to talk of prospects," said one manufacturer, "but certainly everything begins to look like a record year. We are doing more business than ever before already, and we have no hesitation about laying our plans for a larger fall trade than we had last year; and last year was by long odds the biggest we ever had. The demand from the west is certain to show a large increase."

Soil Pipe.—There is a consistent call for soil pipe, and deliveries are becoming brisk. Quotations on medium and heavy soil pipe are: 70 and 10. On the 7 and 8-inch sizes, the discount stands at 50 per cent.

Iron Pipe and Fittings.—The supply houses report a growing demand. Galvanized pipe, 1-inch size, is quoted at \$6.02, and 1-inch black pipe at \$4.37. Other quotations remain the same, as follows: Cast iron fittings, 65 to 70 per cent.; malleable fittings, 37½ to 40 per cent.; cast iron bushings, 70; malleable, 67½; nipples, 75 and 10; headers, 60 and 10, although some quote 67½ and 70; flanged unions, 70; malleable-lipped unions, 67½ per cent.

Lead Pipe.—The price of lead has not advanced, although pig lead is still going up. There has been a good demand.

Solder.—No price changes have been made in solder. Wiping is quoted at 22 cents, and half-and-half at 26 cents.

Metals.—A great scarcity of almost all metals renders the market here rather trying, both for those who wish to buy and for the handlers. Part of this scarcity—a large part—is due to the coal strike in England. Part is the result of poor transportation facilities which are making it practically impossible for the handlers to get their supplies in anything like reasonable time. So bad have the railway facilities become that metal men are wondering if the roads will catch up with their shipments by the time the heavy shipments of next fall commence. There is talk of getting the Board of Trade to look into this matter.

## COMPLETE COURSE OF SHEET METAL WORK.

Continued from page 15.

the pattern Fig. 3 is regulated by the width of the angle or opening of the mitre lines O.B. and O.D. This fact kept in mind will help in understanding the succeeding examples.

Now develop the pattern for one side of a square figure for Figs. 5 and 6.

The method illustrated by Figs. 1, 2 and 3, plate 9, show the principle employed in getting the pattern for a figure having any number of sides, the only difference being in the angle of the mitre lines. For instance, on plate 10 Fig. 1 is the elevation of an ornament we wish to make octagon or eight-sided. The shape or profile of this makes no difference. It can be the same as Fig. 1, plate 9, or any other style wanted.

As we wish in this case to make the figure eight-sided we draw an octagon below the elevation instead of a square.

One of the sides as A.B. must be parallel to the line O.P. Fig. 1.

Then at right angles to the line O.P. and from the centre of the plan O. draw the stretchout line N.M.

Lay out the stretchout and draw the usual measurement lines.

Drop the points on the elevation to the mitre lines O.A. and O.B. and carry out to the stretchout.

Figs. 4, 5 and 6 show the pattern developed for a pentagon or five-sided figure.

Draw the elevation Fig. 4 and below it draw a pentagon. This can be drawn as explained for Fig. 44, plate 3.

To do this the vertical line O.P. is dropped down and a horizontal line A.B. is drawn. Set the points of the compass at O. and describe any size circle. Set the points of the dividers at A, where the straight line meets the circle, and step the circle off into five equal spaces, and number 1, 2, 3, 4 and 5.

Draw lines from the centre O out through these numbers, which will give the mitre lines.

The rest is done as explained for the octagon and square.

Figs. 7, 8 and 9 show the pattern developed for a triangular or three-sided figure.

The mitre lines are obtained the same as for Fig. 5, the only difference being that the circle is divided into three equal parts, instead of five, as for the pentagon.

Figs. 10, 11 and 12 show the pattern developed for a hexagon or six-sided figure, the only difference being that the line O.P. is drawn past the centre, and where it touches the circle forms the starting point for stepping off the hexagon.

As only the lines O.2 and O.3 are required, these only are shown.





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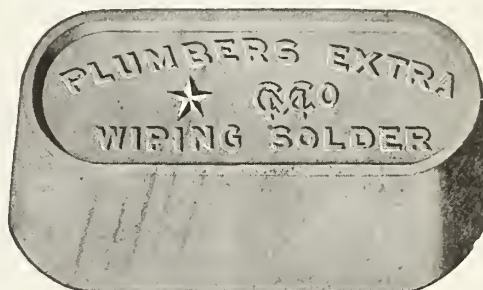
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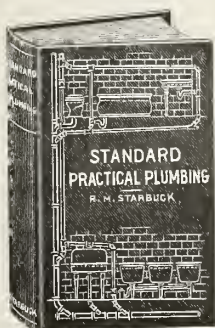
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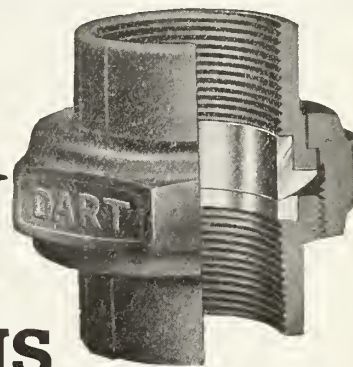
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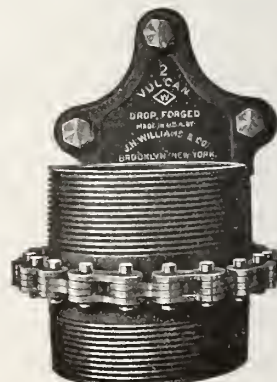
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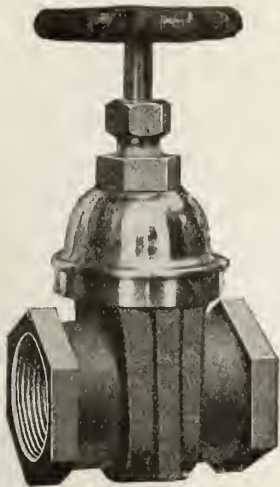
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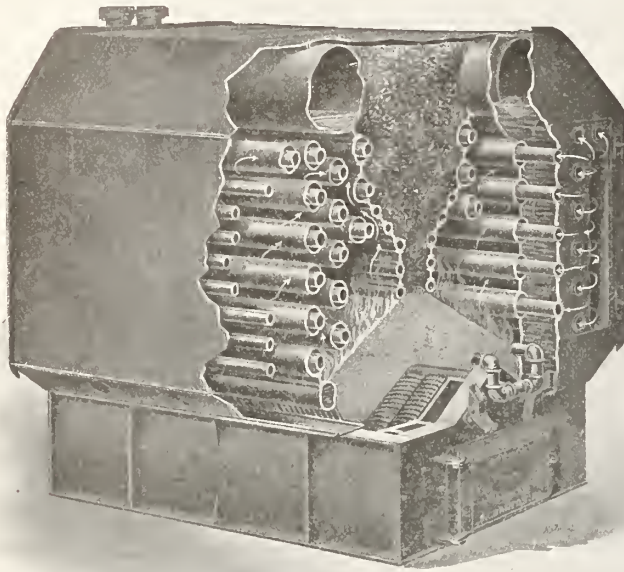
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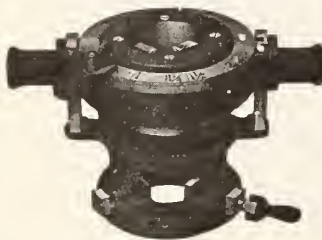


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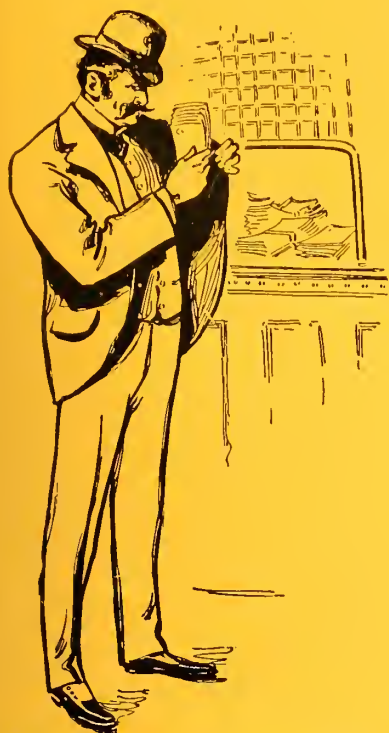
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*and Metal Worker of Canada*

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No. 9

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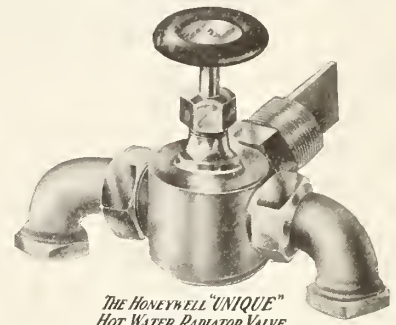
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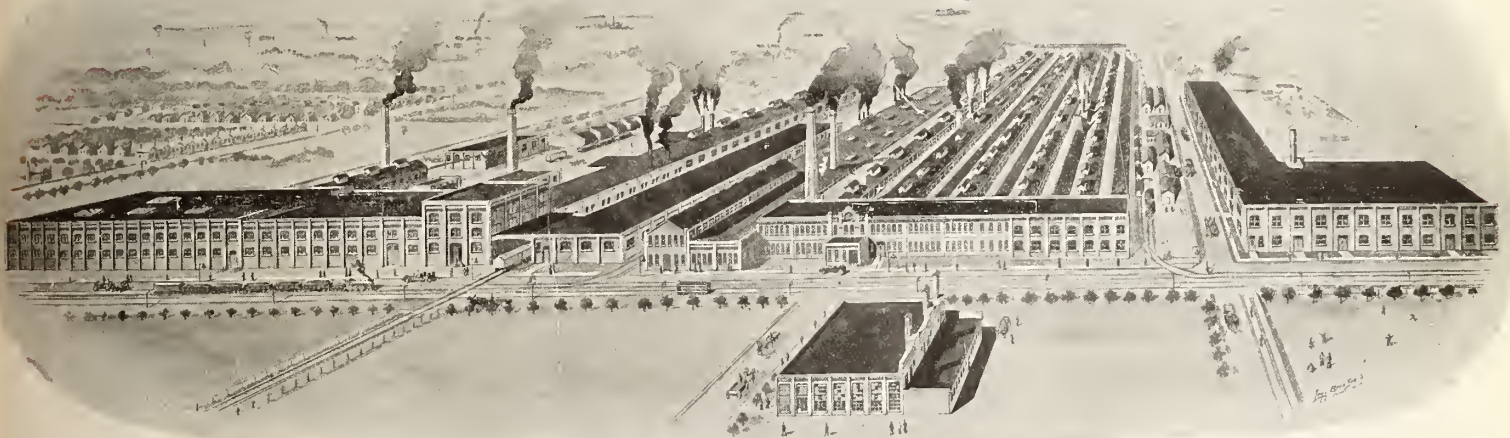
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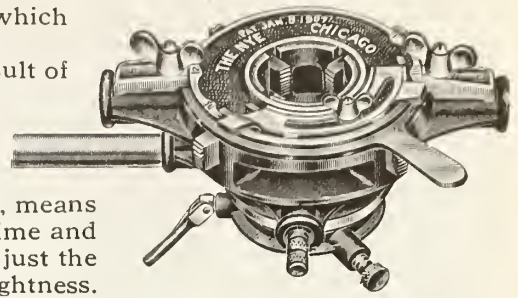
A Ratchet Stock correctly proportioned in all the things which make for quality.

Its evenly balanced and highly efficient mechanism is the result of simplified design.

Simplicity is a feature in tool construction which has a deep meaning for the mechanic. The absence of complicated mechanism in this stock makes it absolutely "Trouble Proof."

Avoidance of constant readjustment and tightening of parts, means the accomplishment of more and better work with a saving of time and effort. The best material obtainable is used in this stock, used in just the proper measure to insure strength and durability combined with lightness. Fitted with finely tempered chasers of "Skip-Tooth" pattern, they can be changed in the stock with ease. The chasers can be instantly released after the thread is cut and the necessity common to most stocks of having to "back-off" over the work avoided.

One set of chasers threads four sizes of pipe—from 1 to 2 inch inclusive. Extra chasers threading  $\frac{1}{2}$  and  $\frac{3}{4}$  inch can be had if desired.



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Brand

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Works: Lachine Canal



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We can quote you an attractive price. Write Dept. H.

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# TWO CENTS PER WORD

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PROMPTLY SHIPPED

UNCONDITIONALLY  
GUARANTEED

EXTENSIVELY  
ADVERTISED

EASILY INSTALLED—  
Because Accurately Made.



### Better Service, another Boiler and Prompter Shipments—Our Program for 1912

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

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Head Office, Fraser Ave.

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138 Craig St. W.



A Group Photo of the Members of the Saskatoon Association and their Guests.

# First Banquet of Saskatoon Association

Members Discuss Trade Conditions and Hear Addresses on the Benefits of Trade Organizations—Harry Potts Speaks of the Work of the Canadian Society of S. and H. E.—Good Results of Local Association Shown.

**S**ASKATOON, April 1.—The first annual banquet of the Saskatoon Association of Sanitary and Heating Engineers proved so auspicious and successful that it will be made an annual event.

The members of the society, reinforced by their friends and a few guests, including Mayor Clinkskill and Harry Potts, of Regina, who occupies the position of vice-president for Saskatchewan of the Canadian Society of Sanitary and Heating Engineers, gathered in the dining room of the Baldwin Hotel. Before proceeding to attack the appetizing spread provided for the occasion, the company lined up to have a picture taken. After this ordeal, with undiminished appetites, they set to with a will and soon disposed of the viands. The table was then cleared, cigars were lighted and the real business of the evening began.

## Advancement of Society.

President D. A. Ross, who occupied the head of the table, opened the proceedings with a short address on the aims of the association, giving some ideas for its advancement. He advised the members to stick together and be honest with each other. It did not pay to allow themselves to be "bluffed" by the class of contractors who hawk prices around, telling each man that the prices quoted by others are lower than they are. His idea was that the members of the association should trust each other and they would soon stop that practice.

"Our City" was responded to by the Mayor, who described the phenomenal growth of Saskatoon and hinted at the great future which lies before it. He referred to the amount of work done toward civic improvement and outlined the work which is planned for the future.

## A Stringent By-law.

"Our Sister Societies" was responded to by H. Reed, of Regina, who congratulated the Saskatoon Association on the steps they had taken to further the cause of trade organization. The Saskatoon by-law, he declared, was much more stringent than that in force in Regina, or in most places, for that matter. He believed, however, that by-laws regulating sanitary work could not be made too stringent from the standpoint of the public.

Mr. Emerson responded to the toast to "Our Visitors," and a response to "Our Medical Health Department" was made by Mr. Taylor, the plumbing inspector.

## "The National Association."

Harry Potts gave an enthusiastic address in responding to the toast to "The National Association." He is one of the strongest members in the West of the Canadian Society and he proceeded with characteristic vim to point out the need for such a body. Mr. Potts demonstrated the benefits in general to be derived and strongly urged every member to put his shoulder to the wheel and

to uphold the rights and the dignity of the trade.

Frank Cornish responded to "The Saskatoon Association," pointing out that already a great deal of good work had been done. He showed that good feeling had existed between the members this year. He believed that if one member was in a tight corner, the others would help him out, whereas formerly when they passed each other on the streets, they were more likely to snarl.

## "The Ladies."

The last toast of the evening was left to W. Watts and he handled it with all the requisite skill required in any reference to "The Ladies." In introducing him, the chairman stated that Mr. Watts was beyond all doubt the ladies' man of the party, and, therefore, could do full justice to the subject. Mr. Watts paid the fair sex many compliments, dilating on the progressiveness of women. He quoted the suffragettes in this respect, showing that they would stick at nothing to gain their ends. He urged the members of the association to take pattern.

The banquet was brought to a close by singing "Auld Lang Syne."

## Banquet Notes.

Harry Potts had to slack up two holes in his belt before the last course arrived.

Billy Watts is a great admirer of the suffragettes. But he has never seen any of them.

The banquet will be made an annual event sure.



## Trade Asks for Representation On All Boards of Health

Fredericton, N. B.—A delegation from the Master Plumbers' Association of New Brunswick, including F. W. Noble and F. S. Walker, of St. John; H. Marquis, of Campbellton; W. Brooks, of Moncton; Earl Steeves, of St. Stephen; J. P. Pickel, of Woodstock, and D. J. Shea, of this city, met the Provincial Government at noon to-day.

They asked that a master plumber be placed on the Provincial Board of Health, that local boards of health be compelled to have a master plumber as one of their members, and that inspectors for boards of health in cities and towns be certified plumbers, so that they would be competent to inspect plumbing.

The delegation were told that their requests would be given due consideration.



Geo. Blake, elected president of the New Brunswick Association of Sanitary and Heating Engineers.

### RESULTS ALREADY NOTED.

St. John, N.B., April 27.—The results of the recent convention of master plumbers in St. John are now becoming apparent, and there is a stronger feeling of union and sympathy amongst the trade. In Fredericton a new local has been organized with bright prospects. Business of much importance was dealt with at the organization meeting, and a set of by-laws and constitutional regulations adopted. The officers elected were Richard O'Brien, president; A. K. Limerick, vice-president; and E. Hurley, secretary-treasurer. The local body will amalgamate with the provincial association.

R. D. Harrington, a popular plumber of St. John, left this week for Edmonton, Alta., and before leaving was remembered by his fellow members of the plumbers' union who presented him with a handsome travelling bag of solid leather. The presentation was made by Robert Quinn, president of the union.



Peter Campbell, secretary-treasurer of the Association.

This is the first step in the campaign for better trade conditions, which is to be undertaken as a result of the recent convention at which the New Brunswick Association of Sanitary and Heating Engineers was formed.

## Important Notices Being Sent Out

Two communications of importance are to be sent out from the office of John Watson, Secretary of the Canadian Society of Sanitary and Heating Engineers, within the next few days. One announces to the press and through the press to the Dominion at large, the change in name which was decided upon

at the last meeting of the society. The other sounds a note of warning to the architects—calling their attention to an abuse which has grown up of late, and urging that this be remedied, and all trouble thus avoided.

It has been felt that the change of name, from Plumber to Sanitary Engi-

eer, should be more generally recognized, and to achieve this end the assistance of the press is being solicited. Letters telling of the new name, and of the reasons for deciding upon this, have been sent to all the provincial vice-presidents. These officials will forward the letters to the newspapers. It was felt this would be the better course, as thus there would be little danger of any community being left in ignorance of the change which has taken place.

### Wisdom of the Change.

Making the new name known, in this way, will, it is felt, put the trade upon a higher level. People, realizing the problems which the heating and sanitary systems present, will readily see that the term engineer, as given to those who install and repair these systems, is a term well applied.

The letter which Mr. Watson is sending to several hundred architects is of vital importance to all engaged in the business. It asks that tenders for heating and plumbing work be called for separately from the tender for the whole building. It does more than ask. It really demands this, suggesting that steps will be taken to force such action if the request is not complied with.

A great deal of trouble has arisen because of the practice of calling for tenders en bloc. This, it is said, simply means that sub-tenders will be let—which, of course, is hard on the sanitary and heating engineer. He has to quote a figure which allows the builder to reap a profit. He is paying the builder for his ability to secure the whole contract.

### Where Nearly All Benefit.

By calling for sanitary and heating work separately—that is, not as part of the whole building contract—it is felt that better work would be done. This would mean that the rake-off to the builder would be stopped. The sanitary and heating engineer, therefore, would be able to ask a little more money, giving just that much better service. He would also be able to do the work for less than the builder would charge under the present system—even after he took that little extra money for himself.

What answer the architects will make to the letter will not be known for some little time. Perhaps the replies will not be made known until the Convention meets in Calgary, but it is quite certain that the point will there be discussed at some length.

### A New Firm.

Winnipeg.—The A. J. La Fay Co., plumbing and heating, have been incorporated here.

## Furnaces Out--Water Heaters in Demand

**This a Splendid Time to Push the Sale of Instantaneous Heaters—This Can Be Done by Advertising, by Personal Letters, and by Good Window Displays—Must Make the People Think of Heaters.**

In so many cases the people come to the sanitary engineer, that the sanitary engineer is in danger of forgetting that it is often to his advantage to go to the people.

This is a time of year when there is a great deal of plumbing being done. It is also a time when people are moving. It is, therefore, a season when new bath room accessories are in demand, and when business can be secured by arranging attractive displays of these. It is not sufficient to have a stock, so that a customer may be accommodated when he asks for a certain article. The successful dealer must also put the thought of the article into the customer's head. A dealer is not expected to supply the people with brains, but it is to his interest to provide something for the brains to work upon.

### A Seasonable Line.

By showing accessories people may be led to think that they need some such articles as are shown. But more than accessories might well be brought forward at this time. Water heaters, for instance, will be well worth displaying in the next few weeks.

This is the between seasons. In some districts people are wondering whether they should allow their furnace to go out. Those who have babies or young children are deciding against this. Others—especially those who are blessed with some open fire places—are dismissing the furnace man, or are taking a rest themselves. The warm weather is about here and furnace fires hardly seem necessary.

This is the thing which makes the present an opportune time to bring water heaters prominently forward. In many cases the discontinuance of the furnace means a discontinuance of hot water. Now heat may not be wanted in the rooms, but heat—in a certain degree—is a very desirable thing in water. This is the off-season for the use of coal, but it is not the off-season for baths. And while there are those who declare they love a cold plunge, the majority of us are only poor weak mortals after all, and are exceedingly pleased that it is possible to take our dip in water from which the chill at least has been removed.

### The People Are Interested.

But to remove that chill is the thing. If the furnace has been discontinued, it means that there will either be cold water, or that some other means of

heating the water must be adopted. Ergo it is evident that people will be interested in suggestions of heating methods.

There are a number of ways in which water can be heated and taken to the bath room. One is to light the stove, fill the kettle, and when the water is heated take it up to the bath room where, mixed with the cold water, the proper temperature may be secured.

But this means work. It is not a pleasant thing to walk down stairs of a morning, light the fire, and then have ample proof of the truth of that old saying, "a watched kettle never boils."

### What Must Be Shown.

This is a luxury loving age. People not only want warm water for their bath but they want to be able to get that warm water easily. Some, for economic reasons, may continue to carry up their hot water from the kitchen; but there are a great many who will be glad to buy one of the quick heaters now upon the market, if they can be shown that these will give them the service which they desire, and at a fairly reasonable price.

There are a number of water heaters. Some are located in the cellar, near the furnace, though not in any way connected with it. They are admirably suited to some households, but perhaps are less handled by plumbers than are the heaters which may be installed in the bath room. These heaters, moreover, appeal especially to those who will be letting their furnaces go out early. They mean that hot water can be obtained quickly and without any trouble. With the heater in the cellar it is necessary to go down there to turn on the gas which does the heating. Where the heater is in the bath room, on the other hand, the water can be started heating as preparations for the bath are started. Such a convenience is bound to appeal to all.

### Good Results from Letters.

There can be no doubt that a great number of people will be disposed to look favorably upon the suggestion that they should get an instantaneous heater. This being so, the question resolves itself into how best to make the suggestion. Of course, there are a number of ways. One is for the plumber to write letters to those for whom he has done work and those whom he knows have not already got an instantaneous heater. This

has been tried by several dealers, and has brought good success.

There is then the plan of advertising. And this, too, has brought results. Advertising always does if it is done wisely.

But whether circulars be sent or not; whether the sanitary engineer advertises or not, he should attempt to do something to make his store speak of instantaneous heaters. One man has arranged a forceful window display. He has equipped a small bath room in his window. In it there is the enamel bath, and beside the bath the instantaneous heater. Printed cards point out that hot water can be secured in a moment by the use of this heater.

### Value of Wagging Tongues.

Such a display causes people to pause. It is an object lesson. It holds the attention of the Missourians as a newspaper advertisement will not. It is not as far reaching as good printers' ink, yet the influence of a window is hard to trace. If the trim be good, people are started talking; and tongue once started it is impossible to say what the result will be.

Yes, this is a fine time of the year to advocate the purchase of instantaneous heaters. Perhaps hardly enough plumbers are handling such lines. Those who are—and their number is large even if it should be larger—are reaping profits. Those who are playing their cards in the best way are reaping large profits.

### FIRE IN WAREHOUSE.

Toronto.—Fire broke out in the warehouse of the Standard Sanitary Manufacturing Co., Richmond Street, about 10.30 on the evening of Thursday, April 25. The damage will be heavy, although the operations of the firm will not be checked in any way. Orders will be filled promptly.

### To Put Up Modern Building.

Regina, Sask.—A fine three-storey, up-to-date building will be erected on Hamilton Street, between the new Leader building and the fire hall early this summer. It will be three storeys in height, and of brick fire-proof construction. The Regina Heating and Plumbing Company will occupy the ground floor, and the two upper storeys will be utilized for bachelor apartments, making an ideal home for the young unmarried men of the city. N. R. Darrah could not give any particulars concerning the building other than to say that it was to be occupied by the above-named company, who it is understood are also the owners.



# Plumber and Steamfitter

## and Metal Worker of Canada

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Circulating amongst Plumbers, Steam., Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, MAY 1, 1912

AN IMPORTANT move has been made by the newly formed association in New Brunswick. A deputation has waited upon the provincial authorities, asking that a master plumber be included always on the provincial board of health and that it be made obligatory for one master plumber to be given a seat on every local board. Consideration was promised.

This step may seem at first glance to be somewhat radical. It is a reasonable certainty, however, that it will come in time, inasmuch as the placing of practical men on boards of health is undoubtedly in the best interests of the public. The duty of these boards is to safeguard the public health in all respects; and no member of society is in a better position to give valuable service in that respect than the sanitary and heating engineer. His work brings him daily in contact with problems affecting public health. He understands, as no one outside the trade can understand, many problems which have a direct effect on civic and household sanitation. No one can give more practical, reliable and efficient service on a board dedicated to the protection of health than the man whose daily work is the improvement of conditions which affect health. We might make that statement even stronger. No board of health should lack the advantage of having at least one member with a thorough grasp and a thorough insight into the theory and problems of sanitation.

The step taken by the New Brunswick Association is in the right direction. A similar agitation in all parts of the country would have a good effect.

WITH THIS issue a new department is inaugurated which will be devoted to sheet metal work. Considerable space has been given in the past to tinsmith patterns and the series of problems by L. W. Koser now running constitutes perhaps the best feature of its kind that this paper, or any other paper, has ever presented. It is felt, however, that the importance of this branch of industry merits wider attention, and in future considerable space will be devoted to the question of sheet metal work in its many phases.

There has been a wonderful development in the sheet metal industry of late years. Metal sheets are now coming into general use for buildings, both inside and out. There is a heavy demand for metal shingles, sidings, ceilings, cornices; for every use, in fact, both ornamental

and useful. Whole buildings are being constructed of metal. There is now a pretty general recognition of the fact that metal has a distinct value for architectural purposes from many standpoints. It is not only durable and attractive, but it serves as an effective protection against fire.

Despite the fact that the sheet metal industry has developed literally by leaps and bounds during the past few years, it is doubtful if the possibilities have yet been fully realized. There seems no limit to the development which the future may bring. Under the circumstances, it will pay the plumbing craft to take cognizance of the rapidly growing importance of the sheet metal industry. Here is a promising line of work which is highly profitable now and will become still more profitable as time goes on. As explained elsewhere, it is a line of work which can be done very handily by the plumber and fitter. It "fits in" in every way,

Everything pertaining to sheet metal work becomes, therefore, of paramount importance to members of the sanitary and heating trades, and the new department in Plumber and Steamfitter will have a deep interest. It is intended to run articles relating to all phases of the work, in addition to the Koser course, which will be continued as before.

In future the name of this paper will be "Plumber and Steamfitter and Metal Worker of Canada," the change being made in recognition of the importance of the metal industry and its close alliance with the sanitary and heating trades.

THE GENERAL outlook at the present time in Canada is very bright. Business in all lines and in all sections is good. In fact, there is every promise that in some branches of industry, the year 1912 will be a record one. A feeling of complete confidence is manifested among manufacturers, wholesalers and the trade alike. They can see sure evidences of prosperity, coupled with growing demands, and are planning to meet the resultant increase in trade. Nineteen-twelve should prove a splendid year for the sanitary and heating engineer.

The prosperity of the country as a whole depends in no small degree on conditions in the West. While opinions differ to some extent, there is every reason to believe that the Western provinces are striking a record gait. A contemporary makes the significant statement that, "there has been considerable activity in placing fall business for some weeks."

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

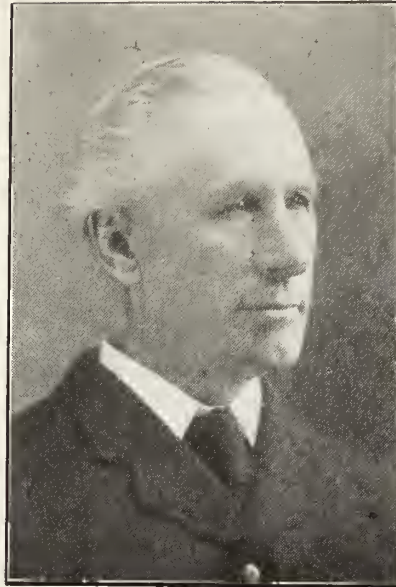
IT is doubtful if there is a better known man in the trade than Samuel Birch, of Kingston. He is an authority on heating work and has been called in for advice on some of the biggest installations in the United States as well as in this country. Before proceeding with any direct references to the subject of this sketch, a brief digression may be in order.

Best results are obtained by team work. Some one man with outstanding ability and pronounced personality can sometimes dominate a situation or successfully manage a business all by himself. But in the main it is team work that counts. In big corporations, efficiency is needed all along the line. One weak spot hurts the efficiency of the whole machine. From president to pen-pusher, from director to drayman, there must be co-operation and team work.

History is full of instances of two-man co-operation. David and Jonathan, Damon and Pythias, MacKenzie and Mann, Kelly and O'Toole—you get them in all times, ranks and trades. When two men are so matched that one supplies what the other lacks and vice versa, the combination is better than any lone-hand competitor.

McKelvey & Birch, of Kingston, have been partners for 47 years. Before that the two members of the firm learned their trade together. They have been working together ever since the time they left school, and they make a great team. What John McKelvey doesn't know, Sam Birch does. If either one lacks a certain quality the other has that particular quality good and plenty. It's a case of give and take and between them they have built up a grand business.

Samuel Birch was born in Ireland and came out to Canada when eight years old. His parents settled in Kingston and there he has remained all his life. When a lad, he engaged in the hardware business in the establishment of Arthur Chown. Another employee was a young fellow named John McKelvey and they became great friends. In 1865 we find



For some years it has not been necessary for Samuel Birch to turn into the work but we warrant he could wipe a joint or lay out a heating job with the best of them.

them starting in on their own hook under the firm name of McKelvey & Birch. Mr. Birch has naturally taken charge of the plumbing and heating end of the business while his partner has inclined more to the hardware department.

People in other cities sometimes hint that Kingston is a sleepy city. Samuel Birch has lived there over three score years and has not acquired any of the sleepiness yet. Although an old man in point of years, he is as active and virile as ever. He is first man down at the shop half the time—the other half, the first arrival is John McKelvey. The firm have contracts in many parts of the country and it is surprising how closely Mr. Birch keeps in touch with the outside work. It has not been necessary for him to turn into the work himself for some years but we warrant he could wipe a joint or lay out a heating job yet with the best of them.

Mr. Birch is of a retiring disposition. It must not be supposed, however, that he has not taken an interest in public affairs. His interest has always been

deep-seated and sincere. He has travelled extensively. When the average man travels he does so for pleasure alone. Mr. Birch has seen as much of the world as he could with the purpose of widening his knowledge. The quiet man is usually observant and Mr. Birch being a quiet man, has used his powers of observation to such good purpose that he has acquired a fund of information on many matters.

Although three score years and ten have passed over his head, he is still enjoying good health and will be found in active business for many years yet, we trust.

## GEORGE'S LITTLE JOKE.

A certain traveling salesman is noted for the heartiness of his methods of greeting. He is always there with a ponderous slap on the back or chest.

This habit has been a source of some annoyance to a customer that he calls upon regularly, one George H. Cooper, but the other day George started for the office with a radiant, contented smile.

"What's the joke?" asked a friend who met him on the street.

"Well, you see," explained George, "that man Blank is always slapping me in the chest and breaking my cigars, I'm going to get even with him this morning."

"How?" asked the other.

"I've a stick of dynamite in my pocket," said George, "so if he slaps at me this time he'll be sorry."

## Business Changes.

Cowansville, Que.—Gleason & Russell, plumbing contractors, have dissolved partnership.

Battleford, Sask.—H. Capstick has been succeeded here by the Battleford Furniture, Plumbing and Heating Company.

Portage la Prairie.—The Western Radiators, Ltd., have sold to L. C. Geb-boney.



# Sheet Metal Workers' Department

## A Splendid Sheet Metal Department

The E. J. Young Co., Calgary, Make a Specialty of Tinning Work—A Description of Their Tinning Department—Sketches of Mr. Young and Mr. Desmarchais — The Close Connection Between the Plumbing, Heating and Tinning Crafts.

THERE is a close connection between plumbing and sheet metal work. Many of the largest sanitary and heating firms in Canada have tinning departments. In the smaller towns, the local plumber almost invariably does tinning work. The two lines go naturally together.

There can be no doubt that there is a good profit in sheet metal work for the plumber and fitter. When he secures the plumbing and heating contracts for a building, he is in an excellent position to handle the tinning work as well. The tools and material can be taken over at the same time as the supplies for the other contract work, and without extra expense. The tinning job can be supervised at the same time as the rest of the work.

It should be borne in mind also that sheet metal work has a future bright before it of such magnitude that it is almost impossible to estimate it. The demand for metal shingles, sidings, ceilings and cornices amounts almost to a craze. Architects and builders are realizing the immense advantages offered from the standpoint of fire protection as well as the possibilities in the way

of improved appearance. Metal is now entering largely into the construction of buildings of all sizes and descriptions, ranging from the humble dwelling to the towering skyscraper.

"The tinshop is the most valuable department of my business," stated a well-known member of the sanitary trade recently, in discussing the close alliance between the two trades. Others state that tinning work has not only proven profitable in itself but that it has helped to improve their connection in the plumbing and heating lines.

The E. J. Young Plumbing Co., Calgary, are among the firms which make a strong feature of tinning work, as the accompanying illustrations of their establishment amply attest. They carry a large staff of tinsmiths and expert metal workers, and do a big business in that line. It will be seen that they have a large stock and that their shops are equipped with machines and appliances for all varieties of sheet metal work.

### Well-Known Firm.

The E. J. Young Co. is one of the best known firms in the Dominion. Mr.

Young (though many who know him through his association connections will hardly believe it) is an Englishman. That is to say, he was born in England, but came out with the family in 1884, at the age of 14, settling in what was then the wild and woolly west, Regina. Mr. Young served his apprenticeship in Regina, living there as he did for 16 years, or until 1900, when he went still further west to his present home, Calgary, where he first acted in the capacity of general foreman in the Calgary branch of the Ashdown Hardware Co.

In 1904 Mr. Young decided to start in for himself and formed a partnership with N. M. Burnett, this partnership continuing up to 1908, when same was dissolved by mutual consent, each gentleman continuing in business on his own account.

Calgary at that time was in the full tide of its phenomenal expansion and, as business increased, Mr. Young found it necessary to enlarge his premises at different times, finally building the Young Block, a four-storey structure with allowance for additional stories when required). The ground floor and basement are used for the business, giving a floor capacity of 18,000 sq. ft.

The upper floors are arranged for apartments.

Mr. Young has always been in the forefront of Calgary's growth, and does not confine himself to the sanitary, heating and sheet metal business alone, having large interests in several of the Calgary financial institutions, to say nothing of his real estate interests.

In 1909 Mr. Young found it advisable to shift some of the burden of executive work onto other shoulders, so he formed the business into a joint stock company, and in 1910 A. Desmarchais joined the firm as sec'y-treas. and general manager. Mr. Desmarchais is an old Montreal boy, his father being one of the pioneer railway men of that city, having been connected with the Grand Trunk Railway for 26 years. Having served his time as both fitter and plumber with what was then the Martin Co., of Montreal, Mr. Desmarchais went to Picton, Ontario, where he had charge of the shop of Carter Bros.

1907, he decided to leave for the West, and see what fortune had in store for a man of ability and indomitable energy, settling in Red Deer, Alberta, a town



A view of the interior of the showroom of the E. J. Young Co., Calgary.



# PLUMBER AND STEAMFITTER



Views of the trimming and fitting departments of E. J. Young Co., Calgary—Mr. Dumarchais, the manager, is shown in the centre.



just midway between Calgary and Edmonton.

After a fairly successful term there, he decided to sell out and try his luck in one of the larger centers, eventually going in with Mr. Young as general manager.

Both Messrs. Young and Desmarchais are firm believers in the value of association work, and are not content to be simply lip servers, but are ready at all times to devote every speck of energy they possess to forward the great movement that is taking place in the sanitary and heating world.

Mr. Young himself is probably one of the best known association men in Canada, he having been connected with the National Association as Alberta Provincial Vice-president since 1906,

and has never missed a convention during that time. He is now National Vice-president and also occupies the chair of the Calgary A. S. & H. E. as President. In fact, Mr. Young is recognized as being one of the bulwarks of association work.

Both of the above gentlemen are strong on technical education, having each received training along this line. Mr. Desmarchais is now one of the examiners for journeymen in the heating end of the craft in Calgary, and is also chairman of the heating committee in the Calgary Association.

Both Mr. Young and Mr. Desmarchais are working tooth and nail to make this coming convention a success, and hope to see a very large gathering in Calgary in July.

each member could get at least a basic education on running a business profitably.

The members of the executive committee of the State Association could greatly assist by securing some of the able and practical men among the manufacturers and jobbers to address the local associations. They, no doubt, would be willing, as a great deal of the benefit would revert to them.

### REAMING THE PIPE.

Editor Plumber and Steamfitter. — I see a lot of con in your paper about reaming out pipes and how much good it will do. Now I have slung the wrenches for thirty years and never reamed a pipe and all my jobs work and I can't see where it would do any good at all and think a lot of this stuff about reaming pipes is all bosh. I hope you'll print this.

"Old Timer."

If he's the "old timer" he claims to be he probably ran his pipes large, much larger in fact than was necessary and so would have plenty of inside space in spite of all he could do. However, if "Old Timer" had to figure on some of the modern small system work where 100 feet of radiation is sometimes placed on a half-inch or three-quarter inch supply pipe, he might, perhaps, find out that there was some good in reaming pipes after all. When he ran pipes (in plumbing maybe) the work was all lead. Now its mostly iron and reaming is necessary if the best results are to be expected.—D.C.H.

### WHY ARE HOUSE HEATING BOILERS NO LONGER BRICKED UP?

Editor Plumber and Steamfitter. — A few years ago it was all the go to set the house heating boilers in brick. Now very few are so treated. Why not? Do they work beter covered with asbestos or is it because it is cheaper?

"Show Me."

We presume that it is a combination of circumstances and competition. A job with a brick set boiler takes at least one day longer and costs somewhat more, than when the asbestos covering is used. Also, unless the boiler is bricked in very carefully with a double wall having a dead air space of from 1 to 2 inches between the two walls, there is no question but what the asbestos covering is much the better. People are getting away from the notion that everything in the boiler line must be set in brick to perform with its greatest efficiency.—D.C.H.

## The Need for Better Business Education

**Members of Plumbing Crafts Should Pay More Attention to Matters Pertaining to Business Management — A Pertinent Question Raised in Able Address.**

The following address was delivered by James Trow at the recent annual meeting of the Massachusetts State Association of Master Plumbers:

Volumes have been written and spoken about what the National and State associations have accomplished for their members along the lines of trade protection, and at times our attention has been called to the greatest existing evil—the lack of business methods and principles in conducting our business. But it remained for S. H. Morgan of Detroit to show every plumber of the National Association the weakest point in our business methods to-day, and it would apply without doubt to 95 per cent. of the master plumbers of the country. But Mr. Morgan went further—he also pointed out the remedy, and no one can help getting a liberal education from a study of his address, for the fundamental principles of business success are there.

### Important Questions for Every Plumber

Now then, taking for granted that all the members of the National Association present have carefully read this address (and I trust that there are none who have not) I want to ask you: "Have you profited by the lesson? have you applied it to your everyday affairs? How many here to-day know the amount of their expenses each year and consider that an item in making prices on work? How many of you know, when you have finished a contract, whether you have made or lost money on that work? How many of you know, when you figure \$100 for labor, whether it costs \$80 or \$125 to do the work? How many of you give that attention to your bills

and collections that your jobber gives to your account?

The lack of this knowledge is the most dangerous enemy to our business. Our trade is advancing and the master plumber is becoming a merchant, though the process is slow—discouragingly slow. It is obvious that our trade is not as respected or as profitable as other lines, while the details are much more numerous and complicated than in any other business that I know of. We seem to be afraid to let our customers suspect that we want a profit, even to the point of actually making them a present of what is rightfully ours. These conditions are present in every state in the union, and the cause, gentlemen, is just this—that while there are exceptions, the master plumbers, as a rule, have had no business training. The plumber is essentially a mechanic, and he has been paying more attention to the mechanical end than to the financial end, and there is where the trouble occurs.

The remedy for this is a campaign for business education, and it is only through and by organized effort that these educational movements can be carried out, and it is going to take the united effort of a combination of bright minds who will willingly sacrifice a portion of their time to remedy the evils in this trade. Therefore, organization is of value only when composed of men who will make a personal sacrifice in a generous effort to promote better trade conditions, and, gentlemen, it must start in our local organization by having lectures, chalk-talks, and practical demonstration of estimating, so that

# Complete Course in Sheet Metal Work

By L. W. KOSER---Number 6

We will now leave the ornamental line for a while and take up pipe work and practical tinsmith problems.

We will now develop the pattern for a two-piece square elbow as shown by problem 1, plate 11.

We will say the elbow is for a 3 inch. pipe. The size of the pipe, however, makes no difference as the principle is the same for any size of pipe, either round or elliptical.

Draw a circle 3 inches in diameter, this represents a plan. See Fig. 1.

Above the plan and in line with it draw the elevation Fig. 2, which is an outline drawing of the elbow showing how it will look when put together. It

also shows the angle of the elbow. The spaces A.B. and D.E. must be the same width as the diameter of the circle, viz. 3 inches.

Draw the line F.C. which is the mitre line or joint.

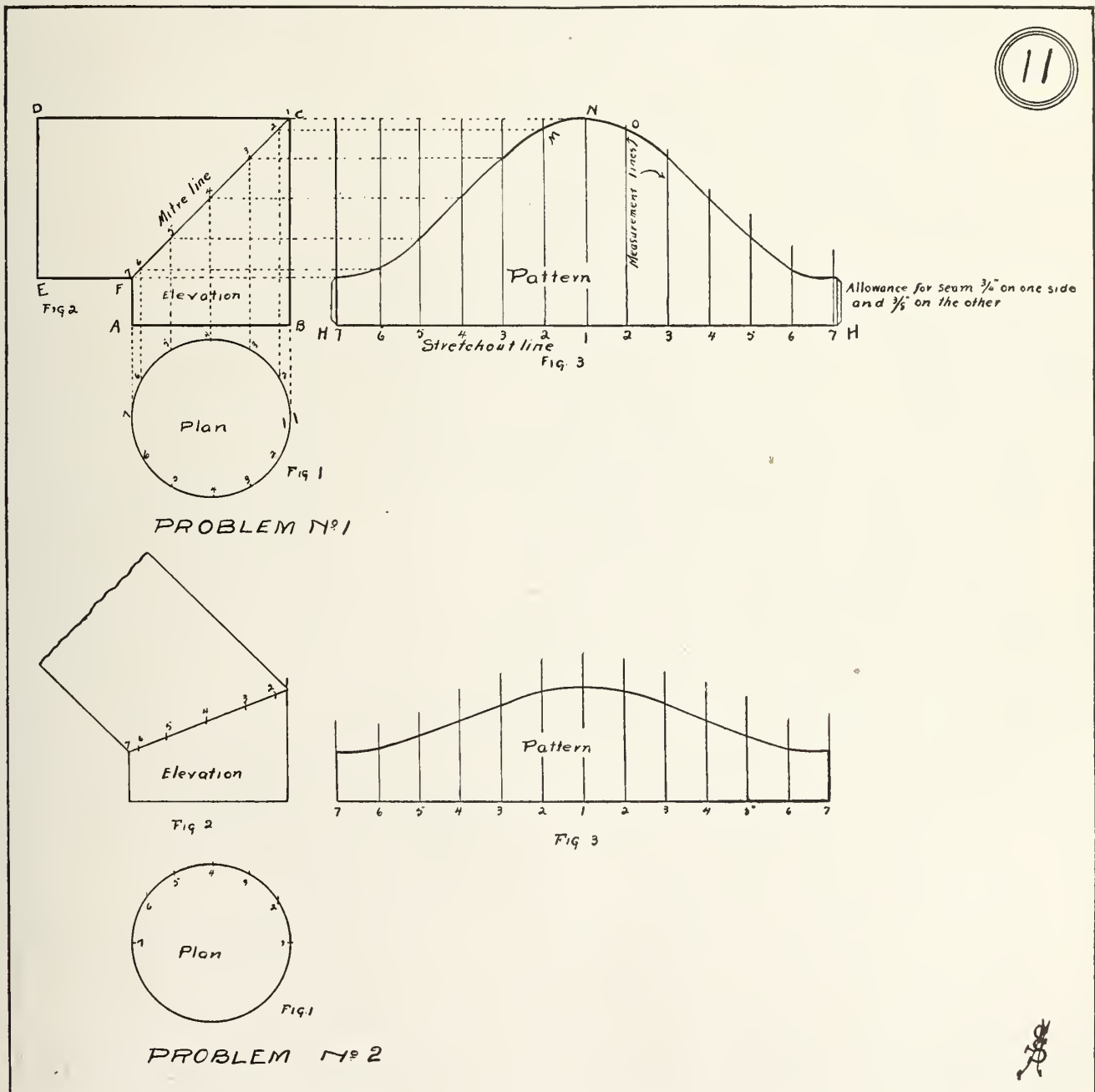
Off to one side and in line with A.B. draw a line H.H. which represents the stretchout line.

Now with the dividers step off one-half of the plan Fig. 1 into any number of equal spaces (in this case six) and number each point 1, 2, 3, 4, etc., as shown. It is only necessary to space off one-half of the circle as both sides of the elbow mitre are the same.

Now transfer the spaces on the plan to the stretchout line. H.H. Transfer twice the number of spaces stepped off, or the complete girth of the circle, and number these spaces the same as on plan. Start with No. 1 in the centre and number each way. Draw the usual measurement line through each number.

Now return to the plan Fig. 1, draw a dotted line from 7 on the plan to F on the elevation or else place the T-sqr. parallel to the line B.C. and carry each point on the plan to the mitre line F.C.

Then place the T-sqr. parallel to D.C. and carry these points out to the corresponding measurement lines and make a mark through each.





A line then traced through these points gives the desired pattern.

**Problem No. 2.**

Draw a square mitre for a 2-in. and 4-in. pipe.

Problem No. 2 is another two-piece mitre, the only difference being that the elbow is at an angle of 45 degrees instead of being at right angles. It will be noticed here that we do not draw the dotted lines from one point to another, we merely place the side of the T-sqr. against the number and make a small stroke through the point we wish to cut, thereby saving time and making the work simpler.

Draw two patterns for elbows of different angles.

Let us now take problem 3, plate 12. This is a 3-piece pipe elbow.

First draw the plan Fig. 1, then the elevation Fig. 2. The pattern for the parts A and B are developed the same as explained for problems 1 and 2, so they need no further explanation.

What we want to know now is how to develop the pattern for the gore piece B.

Having drawn the plan and elevation divide the plan into an equal number of spaces and number each.

Carry lines to the mitre line B.C. and mitre line A.D. by drawing lines parallel to D.C. Now draw the stretchout line N.M. at right angles to the line D.C.

Transfer the spaces from the plan to this line, number same and draw the usual measurement lines.

Now place the T-sqr. or side of the triangle against the T-sqr. so that its edge will run parallel to the line N.M.

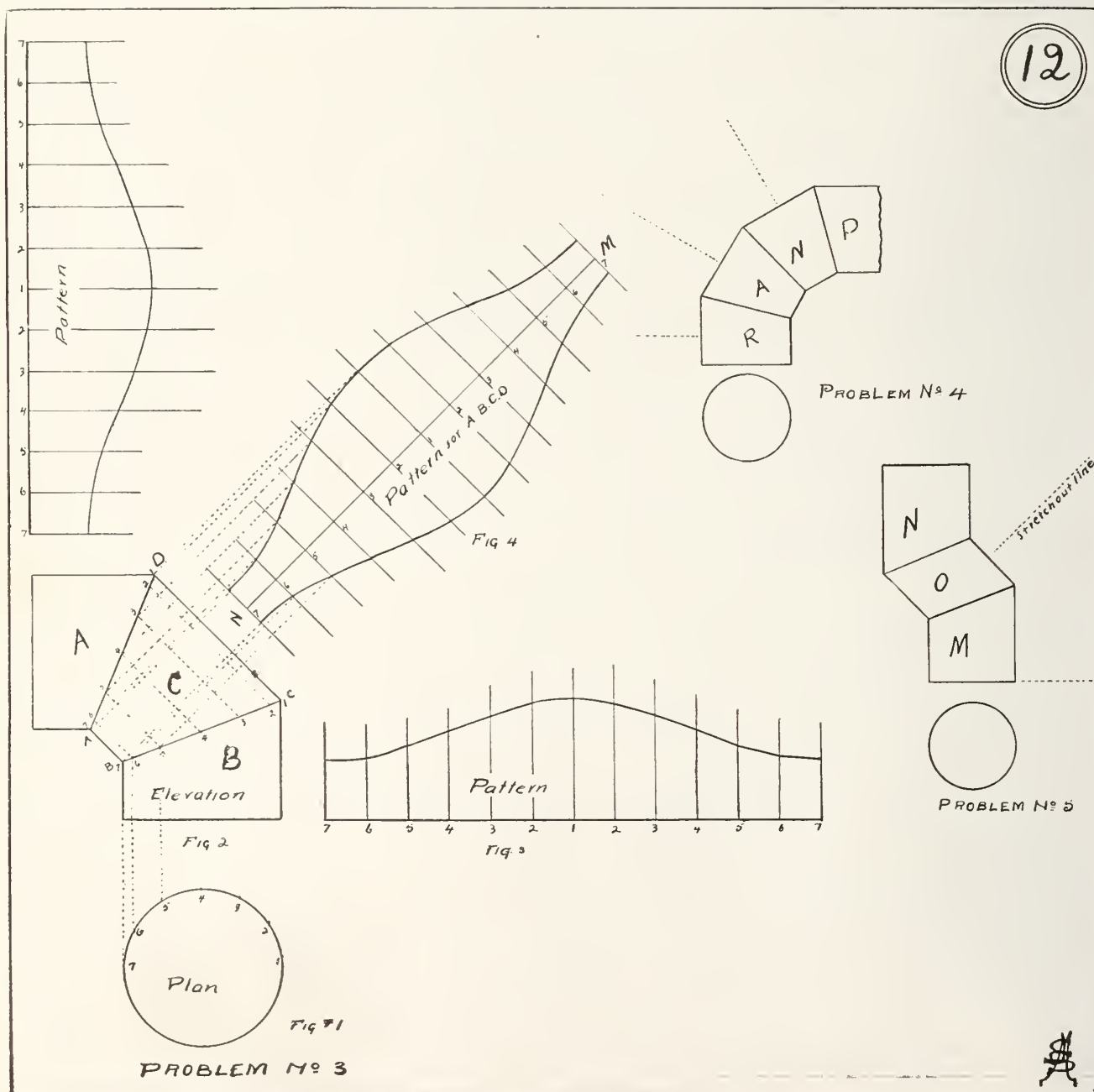
and carry each one of the points from the mitre lines A.D. and B.C. out to the measurement lines having the corresponding number. A line traced through these points gives the desired pattern.

Draw a pattern for a three-piece elbow 4 inches in diameter.

Problem No. 4 shows a four-piece elbow. The end pieces R and D are developed the same as explained for problem 1 and 2. The gore pieces A and N as explained for problem 3, draw a four-piece elbow for a 3-inch pipe.

Problem 5 shows a jog or off-set in the pipe. The parts N and M are obtained the same as explained for problems 1 and 2. The piece O. forming the off-set is obtained the same as the gore piece B, in problem 3 but the shape of the pattern itself is different.

Draw the patterns for an off-set for a 2-inch and 4-inch pipe.





# The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

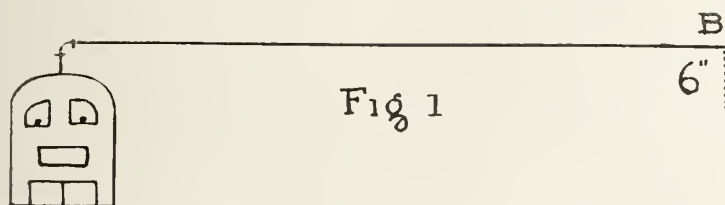


## PROVIDING FOR HEIGHT OF MAIN.

Editor Plumber and Steamfitter. — In rough sketch I want you to suggest, from the one I send in, how I can get the height on a steam main. At point B if I run as I have shown, I would be

The chimney makes the draft and not the boiler. Proof, light some shavings or a paper and put it in the flue and watch results. A green chimney or one full of cracks or places where the mortar between the bricks has dropped

of soot, the soot will become saturated with moisture and a combination formed which will attack the pipe with great vigor destroying it in one or two seasons. Clean the boiler, the chimney and the smoke pipes just as soon as the fire is let out for the season. The apparatus will then be in shape for the next season. While you are about it draw off the water from the system and fill with fresh water which allow to stand



only six inches above the water line. Please inform me.

A. C. R.

You can raise the main in a series of jumps as shown in Fig. 2 at points A, Y, X and B. Point B can be as high above the water as you desire and the cellar will allow. At every jump you'll have to bleed the main and connect into a wet return as shown at points 1, 2, 3 and C. D representing wet return's

out cannot draw well. If the chimney is over-topped by buildings it simply can't draw right. Perhaps the flue is too small. It should have at least as much space as the collar of the boiler on which the smoke pipes connect to. Possibly the smoke pipe has been reduced in size. Also too fine coal may have been used or the boiler has not been kept clean. Also the boiler may be too small for the job. Most any of

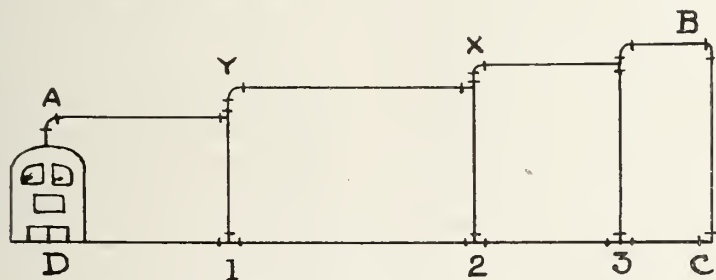


Figure 2.

connection to the boiler. If the main is extra long, put a swing in the middle at say point X as shown by Fig. 3. The points at 4 and 5 should be double-elled and a short nipple used and pipe shown by figure 6 is horizontal. This will provide for the expansion and the main at point B can then be firmly anchored.—D.C.H.

these reasons may be the cause of your troubles, and we advise investigation in the matter.—D.C.H.

## WHAT MAKES THE BOILER SMOKE STACK RUST?

Editor Plumber and Steamfitter. — How can the smoke pipe on a boiler be prevented from rusting out during the summer months?

Chas. Simons.

By taking it off the boiler after the heating season is over, cleaning the pipe thoroughly and then storing the pipe in some dry place (like the attic, barn or woodshed) until its services are required in the fall and winter weather. If left with the winter's accumulation

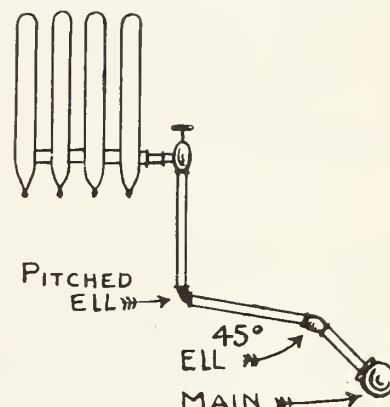


Figure 3.

in the apparatus until ready for use in the fall, when draw off the summer's water and refill the apparatus before starting the fall fire.—D.C.H.

## FEWEST FITTINGS FOR CONNECTION.

Editor Plumber and Steamfitter. — What are the fewest ells and pipes practical to connecting a radiator from the main and ensuring ordinary safe results?

J. E. Smith.

We show these in figure 4, which has been represented to us as a safe and

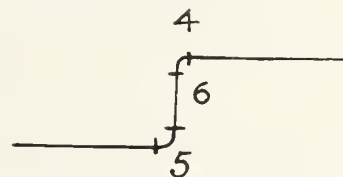


Figure 4.

practical way when the branch is not too long. Such a connection will work well on branches from two to four or five feet in length. The 45 deg. ell and the pitched ell should give plenty of slant for carrying off the condensation.—D.C.H.

## THE CHIMNEY AND THE BOILER.

Editor Plumber and Steamfitter. — The fire in a boiler on a certain job does not work well. It seems impossible to get it to burn briskly. Will you give me some suggestions or hints that might be of assistance?

E. A. Stanton.



# Salesmen Needed in Plumbing Business

An Address by J. S. Knox, of Des Moines, Iowa, Delivered Before the Convention of the Iowa Master Plumbers Association Recently Held at Des Moines.

What is salesmanship? I am going to give you a little definition. It is the ability to make a mutually profitable interchange of values. I want to illustrate that. If in a sale I make all the profit, I am not a salesman; I am a robber. On the other hand, if I make a sale and the other fellow makes all the profit, I am still not a salesman; I am either a philanthropist, an advertiser or a fool. Take your choice. As the gentleman who preceded me said, you are desperately afraid your competitor will get away with something. What are you in business for—your health or profit? I take it that you are in business for profit. When you figure on a job, as an honest business man you have to make enough off of that job to pay your expenses and pay you a legitimate profit; if you don't, you are foolish ever to accept it. If there is a pirate in your business who wants to do that work cheaper than you can afford to, let him have it. You can't afford to do business for nothing. Every business man in this world is entitled to profit enough in his business to educate his family, and have enough laid by when he reaches the age of sixty to retire if he wants to.

When there is something the matter with a man's business, there is usually something the matter with the man. There are just three things that the average man fails to do: He fails to think right, he fails to talk right, and he fails to write right when he writes an advertisement. Failure to think right and to talk right are possibly the two greatest causes of failure in this day and age. We have to think right in order to make the right amount of profit. We have to talk right if we sell our proposition.

Now I am going back to my definition of salesmanship. It is the ability to make a mutually profitable interchange of values. That brings in the mutual benefit idea—the idea of service. I believe the man who gives the best service is entitled to and naturally makes the most profit in the long run. A satisfied customer is the best advertisement. Can a man afford to do any job of work that won't give absolute satisfaction? No; if he does, he is killing his own business. There is such a thing as business-building—giving the right kind of service; and there is such a thing as business-killing—giving the wrong kind of service. The best kind of a job and the best material is going to build your business better than anything else.

The way to eliminate a competitor is

to think about your own line of business—think what you ought to make and pay no attention at all to the other fellow. You can afford to sell on a certain basis and on no other; if you do sell on any other you are giving things away.

In salesmanship there are four big factors: The salesman, the article to be sold, the customer and the sale itself. What have you men done to make yourselves most efficient as salesmen? Personality, some one has said, is the biggest force in politics, in religion, in business, in life. What have you done to develop a stronger personality to make you a better leader? The philosophy of salesmanship is the philosophy of leadership, and the philosophy of leadership is the philosophy of success. A man must know how to develop the forces in himself before he can appeal to humanity as he ought to.

Take the customer: What do you know about human nature? What have you been doing technically to study human nature and get better acquainted with the other fellow?

Take the article to be sold: What are you doing to study the article that you are handling from the time it leaves the manufacturer to the time you sell it? How many gentlemen in this room can tell me all about the goods you are handling from the time they left the manufacturer until they reached your store? If you can do that, you are able to put up an enthusiastic talk in regard to your goods. Hugh Chalmers went over to Europe once to deliver a prize to a man named Smith who had sold the largest number of National Cash Registers of any salesman in the employ of the company during one year. When asked how he did it Smith said: "I defy any man in Germany to ask me a single question about a cash register that I can't answer right off the bat." if you men can do that, you know your goods.

I once stepped into a big furniture store in San Francisco and asked the salesman the price of a big easy chair. He couldn't find the price-tag, and he didn't know. So he called to another man and asked him what it was worth. He didn't know either, but he said, "Look on the tag and you will find it." The clerk finally found the tag, and it was marked \$59. He said nothing about the magnificent chair; all in the world he seemed to know about it was the price on the tag. If he had told me what that chair was made of, how the leather was made, and the luxury of sitting in a chair like that, he would

have aroused my interest and appealed to me; but he didn't even know the price of it.

Ought we to know the value of our proposition? The time is at hand when the man who sells must know the thing he sells from A to Z, and if he doesn't, the other fellow who does know it is going to get more business.

I want to give you an illustration of salesmanship. An automobile man in this city said to me: "Knox, I had a prospect right to the point of buying, and he asked me how soon I could deliver the automobile to him, and I told him I could get it in right away. Then he said he would come back the next week and talk it over." You see when the man asked how soon the machine could be delivered he hadn't said he would take it. How would you have answered that man if you had been there? How many people have said to you, "How soon could you get this bath-tub put in?" Just as soon as you satisfy a man's curiosity his interest is apt to go down. If a man puts a question like that to me, he is asking me to make a decision, and he is going to act accordingly. But my mind takes it for granted that he wants to buy, and I say right back, "How soon do you want it?" That makes him the one to do the deciding, and if he says, "In a week," I put it down.

I want to give you a few illustrations on the subject of suggestion, and to illustrate positive and negative suggestion a little. Suggestion is one of the greatest forces to-day in medicine, in surgery, in religion, in business, in salesmanship; but the average man doesn't seem to have got onto it very well.

Here are two bootblacks on opposite sides of the street; on Saturday afternoon the one on the west side of the street puts up a sign, "Get your shoes shined here;" but the one on the east side has his sign read, "Get your Sunday shine here." Each contains just five words. The first fellow thinks only of the man's shoes; the second appeals to the man's imagination through suggestion. He makes the man think: "Tomorrow is Sunday; I must go to church; we are going to have visitors; I have to be dressed up." The second fellow does just double the business that the first fellow does. Does it make any difference how we use the English language?

I was in a retail store one day, and heard a clerk say to a lady who came in:

Continued on page 17.





# POINTS ON HEATING

By  
CHAS. H. DENISON



## CHAPTER 29.

### "Shoddy" Heating. Different Kinds.

I suppose the word "shoddy" will be thought to apply entirely to the clothing business, but not so. It has been used so much that it seems to have a much wider application now-a-days. I do not see why it cannot be used to designate certain heating installations which are in vogue and hence (rightly or wrongly) have so employed it. If a thing is "shoddy" it is not simon pure, or first class, and hence must naturally be cheaper and not as good.

A philosopher might reason around this and make out that I was lost in the woods, but we are dealing with actual facts and not philosophers.

There are certain things about a cheap shoddy job that a person with half an experienced eye can instantly pick out and not have to strain the imagination very hard either.

Take the radiator valve for instance. You can tell that it is almost as thin as paper by merely glancing at the ring which makes complete the union.

If you have the chance to "heft" the valve in your hand, its a dead cinch to tell a flimsy valve from the weight. Why some of these old-time radiator valves of fifteen or twenty years ago apparently weighed about a ton beside some of the valves that are hooked up to radiators to-day. I don't say all, not by a jugful; for there are men manufacturing valves to-day who are not afraid to put the metal into valves and charge a fair price for the same. Then, again, there are valves that one would be taking chances on to throw at a glass door. It's a cinch some part of the valve would give way. And boilers? Well, now we're getting right down to rock bottom. I was out on a "touring expedition" once, and chanced to pass by a heating and plumbing establishment. Out on the sidewalk was a boiler shaped something like a cross between a locomotive boiler and threshing machine. There was a card on the boiler and on it was printed an inscription somewhat to the effect that anyone who wanted that boiler for use in a heating job could have it free. Further inquiry developed the fact that the heating contractor was willing to give that boiler away if the party who accepted it would let the contractor

pipe the job and sell him the rest of the goods. That boiler had been pulled from an unsuccessful job, sent by freight and all ready made to order in a city about a thousand miles away from the scene of disappointment, for that's what it surely was to the man who bought the goods and installed them himself, just like any old blacksmith could, but seldom did—successfully. Most everybody in the business (on the plumbers' side of the fence) will applaud and unite in saying that the owner who put in his own work "got what was comin' to him."

Nobody in the legitimate (?) ranks ever was guilty of running in any shoddy goods, I suppose? It sure is a puzzle then where ever it all comes from, for you hardly strike a town on the continent but what has more or less of it. Rather more than less I must confess as the result of plenty of observations for the last few years. A shoddy job is a disgrace to the man who buys it, to the man who installs it, and to the man who turns out the goods. Not only that, but in some cases it is positively dangerous from many points of view and should not be endorsed by the building inspector or insurance adjuster in case the city or town does not possess a person with the proper authority to force the job to be safely put in. If you were walking down the main pike in your particular burg, and suspected that there were half a dozen boilers in the various cellars of the building in your vicinity, boilers I say that were liable at any moment to rise on their hind quarters and leap into the blue sky. I wonder if you really would make a move to get matters safely adjusted in such a case. Read the papers for the past year and see who did and who didn't. You'll be convinced then that unlimited shoddy jobs are on hand at all points of the compass; that the danger is real, not fancied, and that there are far more sinners in this respect than you ever, for one moment, supposed.

### SALESMAN NEEDED IN PLUMBING BUSINESS.

Continued from page 16

"Mrs. Brown, you wouldn't want any oranges to-day, would you?" A negative suggestion always tends to get a

negative result. Of course she didn't want any oranges; the clerk has just told her she didn't! In another store this is what I heard a clerk say: "Mr. Jones, we have a car-load of oranges just in from Florida; they are rich and sweet and juicy. They are only forty cents a dozen and I believe you could use some of them." Mr. Jones became interested at once, and replied, "Why, yes, I believe I do want some oranges; I will take a dozen." And so the clerk went on suggesting until he had sold Mr. Jones a good-sized bill of goods. Then just as he was going out of the door he handed him a fine peach, calling his attention to its beauty and desirability, and said, "Just taste it, and see how fine it is! You ought to have some of those to put on your table."

Ninety per cent. of the salesmen in this country are continually using negative suggestions. It took me five years to break myself of it, and I forget it once in a while even now.

I was in a meat market and asked the butcher the price of bacon. "Thirty cents," he said; and he looked out of the window as much as to say, "It is thirty cents a pound, and you bet your life you are not going to get any of it." Indifference—lack of interest—is one of the things that hurts our business. If I talk to you fellows in a singsong fashion, I lose your attention at once; and if I try to sell a bath-tub in the same way the customer will go to sleep. We must interest, arouse and enthuse our customers.

A man went into a store to buy a shirt. He looked at one that pleased him very well. It was \$4, and he was about to say that he would take it when the clerk remarked, "This is a fine piece of junk." Well, when you hear that word "junk," you know you think of the man coming up the alley calling, "Old Rubbers and Old Iron." That man dropped the shirt and got out of the front door!

Some of you fellows are unmarried. If one of you should decide you wanted to marry, you wouldn't go up to see Mary and say to her, "Mary, you wouldn't want to get married, would you?" Of course she wouldn't, unless she thought it was the very last chance she had in the world!



# The Ventilation of a Sunday School

Unique Methods Adopted to Provide Fresh Air in Good-Sized Auditorium at Upper Montclair, N. J.—System Has Proven Successful in Every Respect.

THE importance of ventilation as an allied science with sanitation and heating is becoming rapidly recognized. Sanitary and heating engineers are paying more attention to this branch of work. It is realized that the necessity for proper ventilation in buildings is almost as pronounced as the need for heat and sanitary appliances. The following description of a Sunday school ventilation system, reproduced from the "Heating and Ventilating Magazine," will, therefore, be of interest to the trade:—

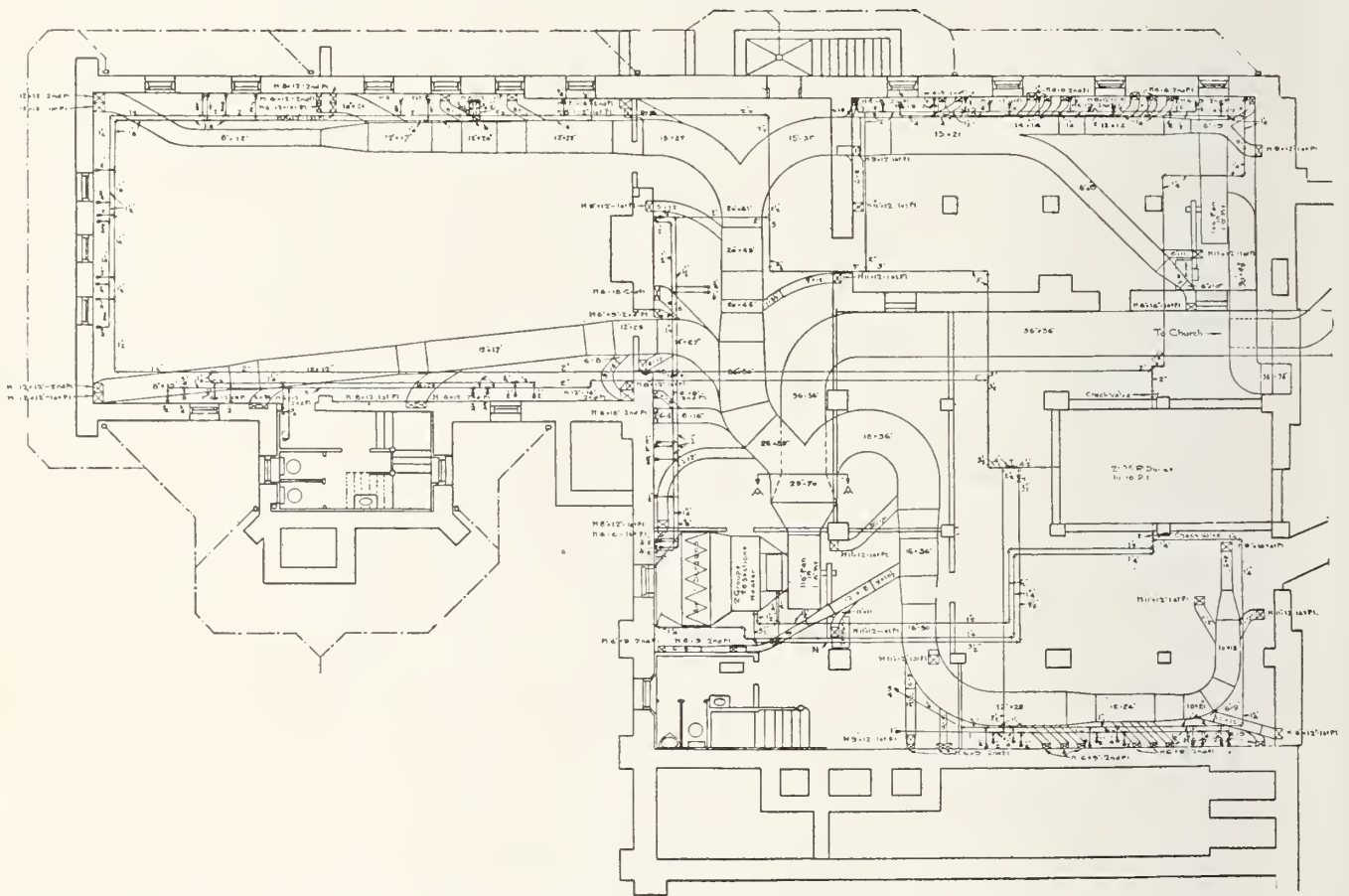
Aside from the fact that the accom-

panions, of which number about 350 are provided for in the auditorium proper. The cost of operating the heating and ventilating plant in a building of this character was one of the features that required careful consideration.

Some part of the building is in use almost daily during the cold weather and heat has to be maintained in the various rooms almost continuously. Ventilation is required for a short period of time during occupancy. The heating, therefore, is accomplished by direct radiation and the ventilation by an en-

gineering system. The air is carried down toward the floor. The velocities are arranged not to exceed 200 ft. per minute.

The vitiated air is exhausted at the ceiling by means of a full-housed steel plate fan connected by ducts to the various outlets. The velocity of air through the vent outlets is about 1,800 feet per minute. The outlets are arranged so as to draw air evenly from all parts of the room. The volume exhausted is about 80 per cent. of the volume of the air supply, 20 per cent. being allowed for ordinary leakage.



Heating and ventilating plant for auditorium, showing arrangement by which ventilating system could be extended to

panying plans present a number of unusual features in the design of ventilating equipment, the successful operation of the system as installed, giving such marked satisfaction as to call for general comment, lends a timely interest to the scheme adopted. The system as illustrated herewith is used to ventilate the Sunday school auditorium and the rooms connected therewith at the Christian Union Congregational Church in Upper Montclair, N.J. It is intended to provide a sufficient volume of air, and to maintain its purity, for 600 per-

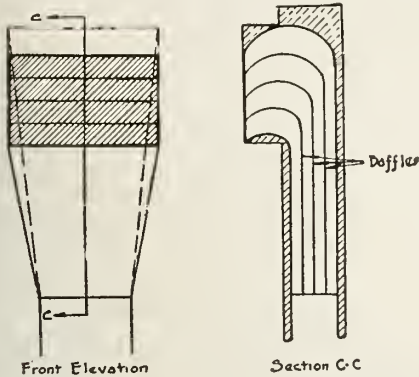
cent of the total volume of air in the building.

The air for ventilating is taken from the outside and passes successively through screens for removing the dust, thence through tempering coils and a humidifier. It is then driven by a fan through the fresh air ducts into the various rooms. The air is tempered in this manner to about 80 degs. F. It is admitted to the rooms near the floor lines, the registers being placed just above the baseboards. These inlets are so arranged with deflectors that the air

is carried down toward the floor. The velocities are arranged not to exceed 200 ft. per minute. The vitiated air is exhausted at the ceiling by means of a full-housed steel plate fan connected by ducts to the various outlets. The velocity of air through the vent outlets is about 1,800 feet per minute. The outlets are arranged so as to draw air evenly from all parts of the room. The volume exhausted is about 80 per cent. of the volume of the air supply, 20 per cent. being allowed for ordinary leakage.

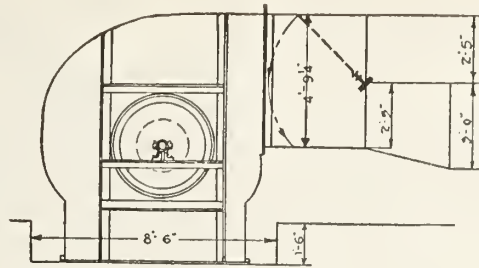
In order to maintain the outdoor condition of the air supply, the humidifying

apparatus is designed to maintain a relative humidity of 60 per cent. This apparatus consists of coils of steam pipe placed in a tank of water which is automatically supplied by means of a float valve. The steam in the coil is controlled by a humidistat which is located in the auditorium, so that the humidity supply is governed by the conditions in



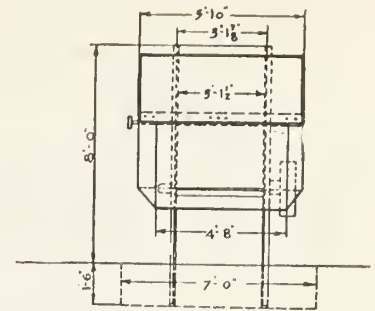
the room occupied, rather than in the air chamber between the heaters and fan or elsewhere. The idea both with the temperature and humidifying control apparatus, was to have the control exercised in the atmosphere of the room occupied.

During the session of the Sunday school, the spaces under the balcony are occupied by classes and, by means of



Side Elevation of Fan & Main Duct Damper

Fan elevations showing damper arrangement for double duct.



Section A-A

sliding doors, each class room is made practically into a separate room. The plans for heating and ventilating necessarily included methods for warming and ventilating these rooms individually, as well as forming a part of the general scheme for ventilating the entire room when thrown into an auditorium.

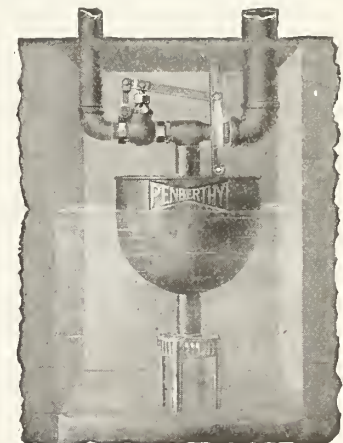
It was desired; when the installation was made, to have it designed so that it could serve for the Sunday school portion of the building or for the main church auditorium, immediately adjoining. It was necessary, therefore, to connect both the supply and exhaust fans to both sections of the building and so equip them that by operating a damper in the main duct connected to each fan, the plant could be put into

service in either portion of the building. The plans for the supply fan show how this was accomplished. The larger damper shown is balanced by weights and connected with a switch operated by the thermostatic system, so that by throwing off two switches, the supply and exhaust fans can be put into service in either part of the building. Duplicate sets of thermostats and humidostats are placed in the church auditorium so that the control of temperature and humidity is always exercised from the part of the building which is using the system.

The exhaust fan is placed in the basement. The reason for locating it there found for it in the attic and because connection could more readily be made from the church auditorium without the use of an additional unit.

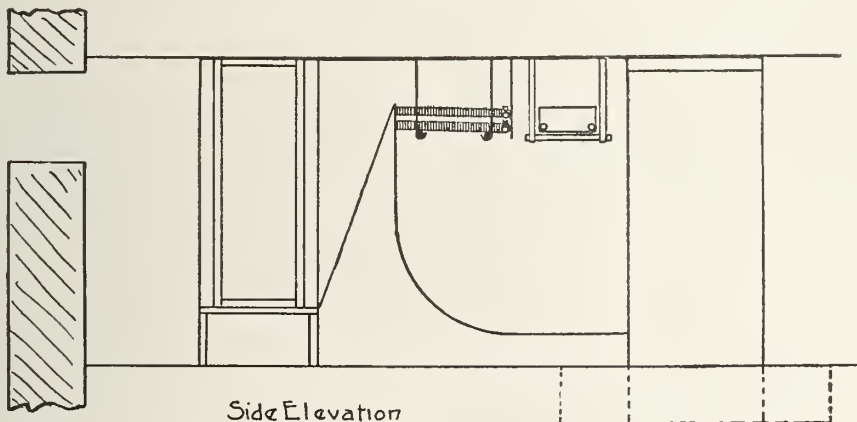
## A CELLAR DRAINER.

The Penberthy Injector Co., Windsor, Ontario, have put a new cellar drainer on the market, the construction of which

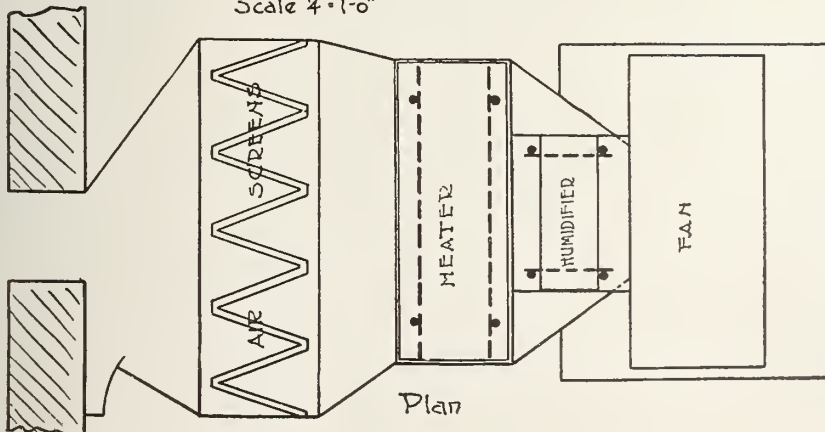


is shown in the accompanying sketch. It has many advantages which are outlined in a pamphlet recently issued and which can be obtained by application to the company.

Moose Jaw.—John MacWatt has sold his plumbing business to a new firm known as the Alexander Plumbing and Heating Company.



Side Elevation  
Air Screens - Heater & Humidifier  
Scale 1/4" = 1'-0"



Heating and humidifying scheme.



# Plumbing and Heating Markets

## MONTREAL.

Montreal, April 29.—So busy are the plumbers just now, installing heating systems in buildings which have been rushed through the winter, and which are now reaching completion—that they have but little time to consider prices of materials, yet they must give some attention to this. Some took time to study the subject a fortnight or more ago. They were the wise ones, for as was then suggested there has been an advance in lead pipe and all other lead products. This was to be expected owing to the scarcity in the pig lead caused by the English strike.

It is a time of advances indeed. Not only lead but tin has risen; iron piping alone shows the opposite tendency. But put not your trust in iron. It remains low only because of bad business conditions in the States which make the Canadian manufacturers fear competition from there.

### Moving Makes Business Move.

Business on all hands is reported good. Everything is moving at this time of year. New houses are being opened. Others are being rushed to completion, and it is imperative that the plumbing work in them should be installed as soon as possible. May first is the day set to have work done, but in many cases it is impossible to finish operations in this time.

Enamelware.—At the present time there is a certain demand for this. The dealers must be able to supply goods for the houses just being completed. But more especially they are laying in a stock to be in readiness for the big demand which will come a little later. Specialties, such as enamel bordered mirrors, glass bathroom shelves and towel holders, are in great demand at the present moment.

### New Prices on Lead Pipe.

Lead Pipe.—As has been said, prices have advanced, the discount now being quoted at 22½ in place of 25 per cent. The point of great interest in the market relates to the future. Will the advance continue? It appears this will be the case, for though shipments are expected on an early boat, the cost of producing lead in the old country will yet be higher, on account of the higher price of coal. Exhausted stocks will have to be replenished, and as a natural result prices will need to be held up. The amount of Trail lead produced will not be sufficient to pull the price down.

During the last week the advance on lead, and the excess of the demand over the supply, has forced the local dealers to raise their prices. Trail and imported pig are quoted at \$4.95, or ten cents a cwt. more than last week; and bar pig has been advanced to \$5.25, a rise of ¼ a pound. There seems good cause to expect a still further rise.

### Rising Market on Sheets.

Tin.—It appears tinsmiths will have to pay more for their material. On the English market there has been an exceedingly rapid advance, and this necessitated a higher level being struck here. Lamb and Flag and Straits are now quoted at \$49.50 instead of \$48.50. Here, too, the indications are for a rising market on sheets and plates.

Iron Pipe.—If business conditions improve in the States, the decrease in prices recently noted will quickly be a thing of the past. Iron is scarce at present—and though the supply will become larger as the summer advances, there is not likely to be any greater stock than is needed. The price of pipe, in the future, hangs pretty largely upon the conditions in the States.

Furnaces and Radiators.—The manufacturers are busy producing as largely as possible, in view of the fall demand which is bound to be large. The immediate demand is heavier than might be expected. A number of buildings are just nearing completion, and in these heating plants are being installed.

## TORONTO.

Toronto, April 29.—The plumbing and heating markets have been characterized by unusual activity for this time of year. The early date at which building operations were actively resumed has brought about an earlier demand for supplies in the plumbing and heating trades. This refers particularly to the heating trade. Many buildings which were left uncompleted during the winter were finished up as soon as spring arrived. This created a big demand for heating supplies and, of course, a large demand also for plumbing supplies.

The weather has been more favorable during the past fortnight and this has had an effect on business also. The supply houses report that the demand has been heavier by quite a margin than it was at this time last year. Orders are pouring in, many for immediate delivery.

## An Upward Trend.

There is an upward tendency in prices. This is due primarily to the rapid advance noted in practically all metals. With the cost of raw material thus increasing, it is not strange that the manufactured articles are firmer. It would not cause any surprise if a pretty general advance were noted before long.

Enamelware.—The demand has picked up considerably during the past two weeks. The supply houses now report that they are receiving heavy orders. It is noticeable that the demand for the better grades of enamelware is growing all the time.

### Heating Goods Active.

Boilers and Radiators. — One would almost imagine, from the activity that the heating trade is showing, that the fall season had been reached. There is a very active tone. "We are selling more boilers than usual at this time of year," said one manufacturer. "We are looking forward to a record year." That seems to be the keynote throughout the heating year. Everyone is looking forward to breaking all records this year.

Soil Pipe.—There is a consistent call for soil pipe, and deliveries are becoming brisk. Quotations on medium and heavy soil pipe are: 70 and 10. On the 7 and 8-inch sizes, the discount stands at 50 per cent.

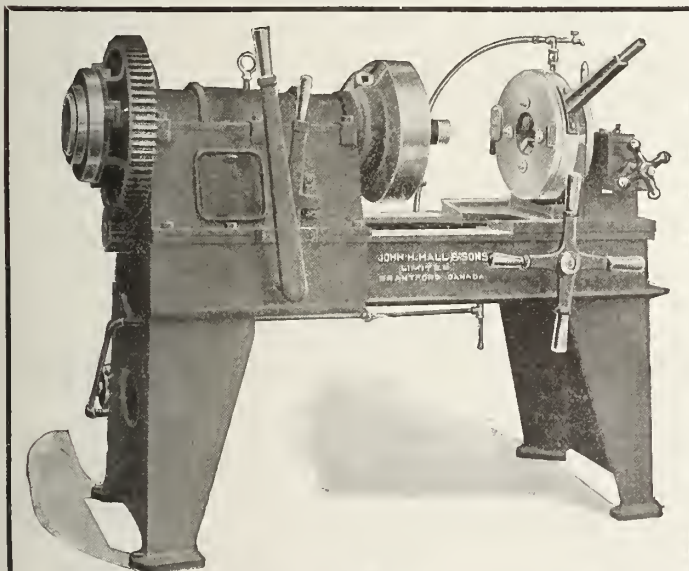
Iron Pipe and Fittings.—There is a good demand and the enquiries received indicate that this condition of affairs will continue. Quotations are as follows: Cast iron fittings, 65 to 70 per cent.; malleable fittings, 37½ to 40 per cent.; cast iron bushings, 70; malleable, 67½; nipples, 75 and 10; headers, 60 and 10, although some quote 67½ and 70; flanged unions, 70; malleable-lipped unions, 67½ per cent.

Lead Pipe.—There is talk heard of an advance in price, due to the increased cost of pig lead. There is a good demand.

Metals.—The situation in metals is eminently satisfactory from one standpoint and rather alarming from another. The satisfactory side of the question is the fact that consumption is very heavy. There is a big demand all along the line and there is every reason to believe that this active condition will be maintained right through the year.

The unsatisfactory features are found in the extreme scarcity of some metals, tending to higher prices in most lines. There is no relief in sight in some lines, particularly as the demand continues so consistently heavy.





## PIPE THREADING MACHINES

MADE IN CANADA. ALL SIZES.

Belt or motor drive for the plumber, the jobber, or the mill, also Double and Single Head Rapid Nipple Machines.

### RAPID UPRIGHT ROLLER PIPE CUTTERS

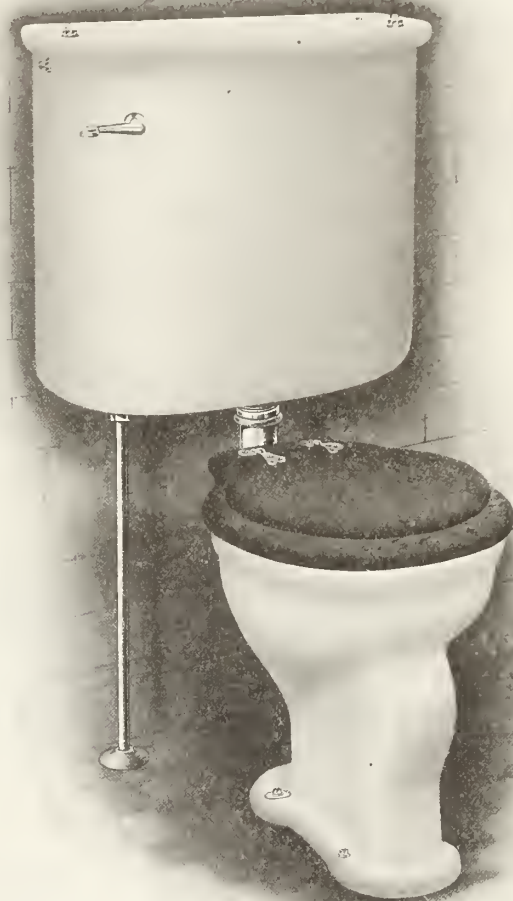
Write us for prices on pipe machines, any size from an  $\frac{1}{8}$  to 18 inches.

**JOHN H. HALL & SONS, Limited**  
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# MORRISON'S

## Porcelain Low Tank

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## GUARANTEED

### To Give Complete Satisfaction

These tanks are strong and durable. They contain no lining to be effected by any alkali in the water, and eliminate the trouble of splitting, which frequently occurs in the wooden tank. Above all they are more sanitary. Every progressive plumber should have a sample outfit.

**The**  
**James Morrison Brass**  
**Mfg. Co., Limited**

93-97 Adelaide Street West, - Toronto



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ADDING TYPEWRITERS WRITE, ADD OR subtract in one operation. Elliott Fisher, Limited, Room 314 Stair Building, Toronto.

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HINGED PIPE VISES

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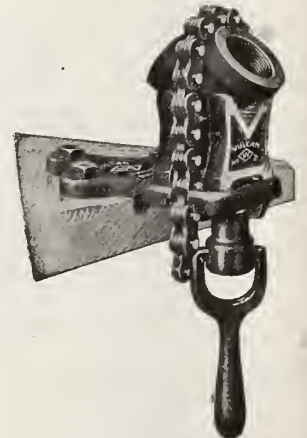
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Warranted from "stem to stern."

Buy from your dealer.

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Superior Drop-Forgings

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### J-M ASBESTOS LEAD JOINT RUNNER

is made of especially prepared pure Asbestos rope, of square cross-section, with clamping device for fastening snugly around the joint. Cannot char or burn from the molten metal and cannot be pulled off. Fits all sizes of pipe.

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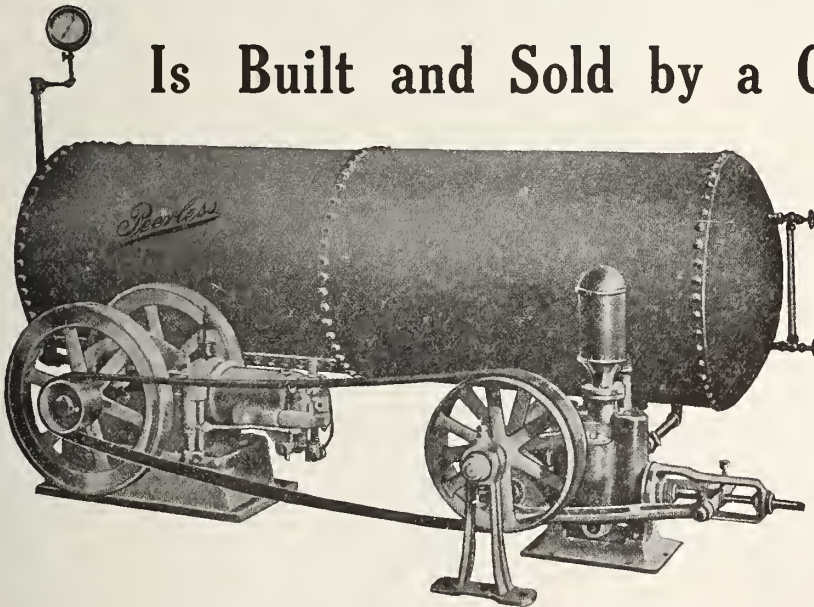
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Do you get this—read it again.

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No. 6, threading  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  in. complete.  
No changing of Dies or Bushings.



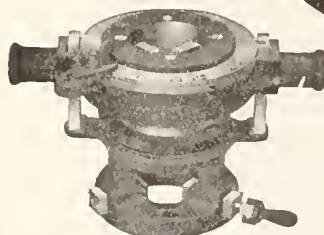
**"WARREN" DIE STOCK**  
(Non receding dies—adjustable.)  
Each stock cuts two sizes. Made in four sizes.

## A Perfect Thread

CAN BE EASILY AND QUICKLY OBTAINED  
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# "Beaver" Adjustable Die Stock

Each die stock contains one set of dies which can be used to cut four different threads—a twist of the wrist sets the size. The "BEAVER" requires less keep-up expense, as it eliminates the buying of three die sets. One Beaver set will last as long as four ordinary ones and give better service. Get our prices.



No. 25B, 1 in. to 2 in. R.H. complete.

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No. 41, cuts  $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$  and 4 in. pipe.



Hot Water Quick Opening Radiator Valve.

## "Miller" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joints or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.



Steam Radiator Valve.

**MILLER LIMITED, - LONDON, CAN.**

LEAD PIPE  
LEAD WASTE



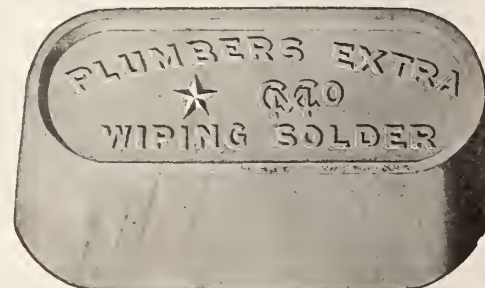
LEAD PIPE  
ANY SIZE

BLOCK TIN PIPE  
The Canada Metal Co., Ltd.  
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Lead Pipe      Lead Waste  
Hydraulic Drawn Traps  
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The Solder with the tin in.

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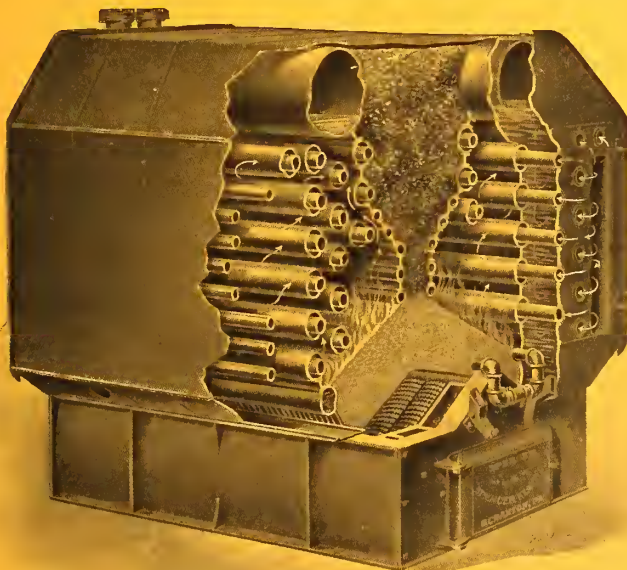
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TUBES—Knobbed charcoal iron.

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CONNECTIONS—Tubes expanded into the Headers identically the same as the construction of high pressure boilers.

MAGAZINE FEED—Is formed in the centre of the two complete sections, and will hold twenty-four hour supply coal.

ARCHED GRATES—Are used to assure uniform thickness of fire over the grates, causing the coal to burn evenly, and to slide from the magazine as it is consumed.

FIRE TRAVEL—There is no possible way for the fire to short circuit, as the boiler has a positive three-way fire travel.

NO WASTE FUEL—The grates shake freer at bottom than at top, and are specially constructed for burning cheap grades of fuel, without waste, and less fuel per square foot grate surface is consumed per hour.

SERVICE—One supply of Anthracite Pea Coal will operate the boiler for twenty-four hours and the grates will not require attention more often than every eight or twelve hours in the coldest weather, and **one half** the boiler may be operated in mild weather.

Visit our Show-rooms.

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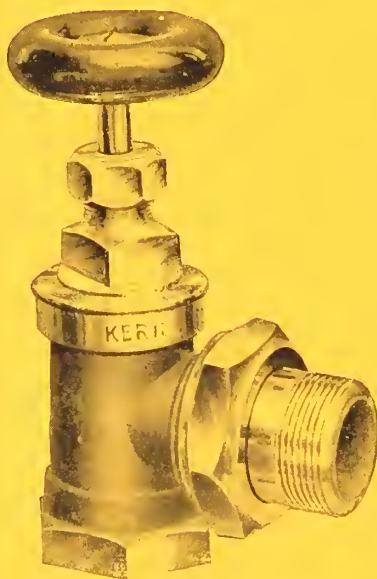
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No. 10



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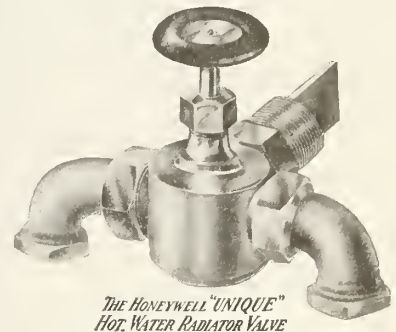
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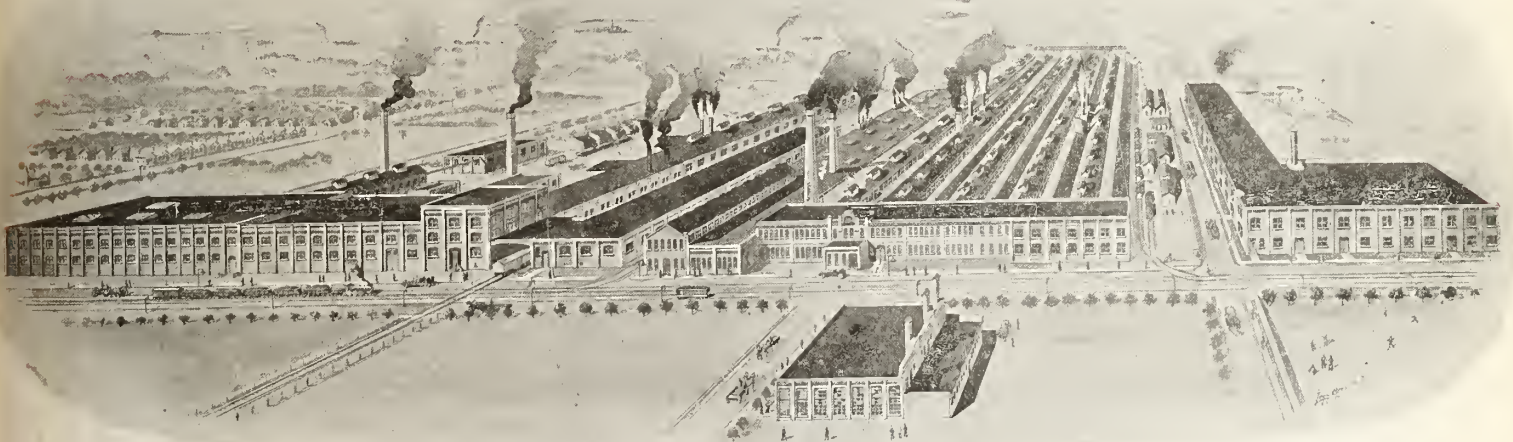
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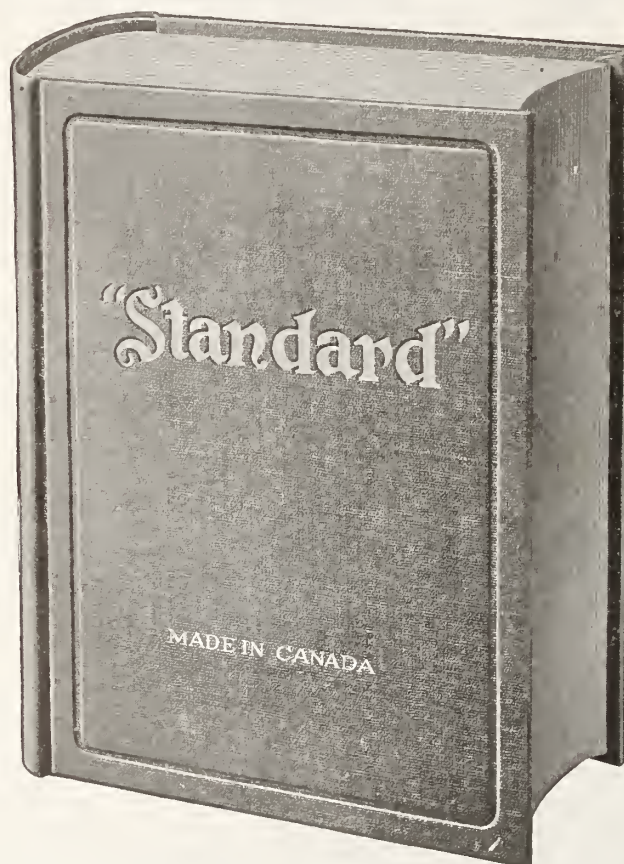


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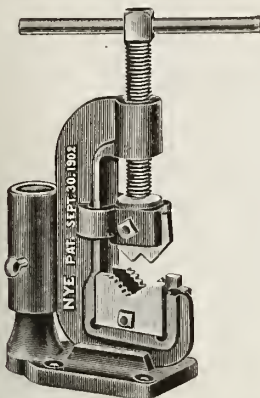
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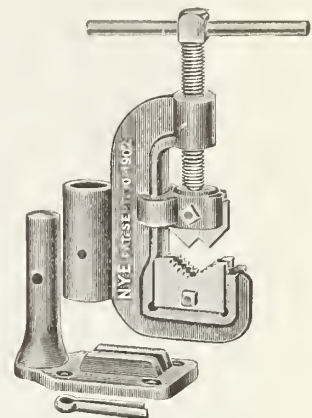


It consists of a two-piece malleable casting—the base can be permanently fastened to the work bench and the vise proper detached at will by the removal of a cotter pin. When separated from the base, a piece of  $\frac{1}{2}$  in. pipe is slipped through the hollow sleeve at the back of tool and held by a helper.

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*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the coming year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

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# National Society Revised Constitution

Second Draft Has Been Prepared by the Officers — Some Changes Embodied Which will be Discussed at the National Convention at Calgary—Word “Domestic” Inserted in Name of Society.

THE officers of the Canadian Society of Domestic, Sanitary and Heating Engineers have completed the second draft of the revised constitution and by-laws. A number of changes have been made which will be taken up at the coming convention at Calgary. Every member should read the draft through carefully to be in a position to discuss it at the convention. The constitution as revised follows:

The Canadian Society of Domestic Sanitary and Heating Engineers shall consist of the Canadian Society, Provincial, and Local Association composed and organized as hereafter provided.

## Object.

This Society is organized for Sanitary Heating, Commercial and Social purposes, and has for its special object the advancement of trade in all its latest discoveries of science appertaining to sanitary heating laws; to promote and combine the interests and influence of members for the protection of trade against imposition, injustice or encroachment upon our common rights and interests, encouraging inventions and improvements in sanitary appliances, fostering an interchange of thought, and electing and communicating for the benefit of every member the best talent and the result of the experience and ability of all; to promote amicable relations with employes on the basis of mutual interest and equitable justice to both journeymen and masters; to encourage Dominion and Provincial legislation for the interest of sanitary laws; to secure for the members of the trade equitable treatment in their dealings with manufacturers and dealers in supplies; to regulate the system of apprenticeship and employment, so as to prevent as far as practicable the evil growing out of deficient training in the responsible duties of selecting, arranging and fitting up materials relating to the hydraulic and sanitary heating condition of dwellings, public and private institutions; to create and maintain a sanitary code in as high a standard as the progress of science (chemical) philosophical and mechanical knowledge, teaches, and we agree to carry forward with tireless zeal, the work to which the foregoing statements relate.

## Title.

(Sec. 1.) The Canadian Society of Domestic Sanitary and Heating Engineers shall be governed by the Canadian Society of the Dominion of Canada, which shall be known and hailed as the

Canadian Society of Domestic Sanitary and Heating Engineers. The Canadian Society shall be composed of its officers, elected and appointed, and such representatives as may be properly appointed by the Provincial and local associations.

## Jurisdiction.

(2) The Canadian Society shall have jurisdiction in and confine its operations to the several provinces and territories of the Dominion of Canada. It is the supreme tribunal of the order, having the power to make its own constitution and laws for the regulation and government of the whole order, and to amend such constitution and laws as it may deem wise. It shall have the power to issue charters for all associations; to suspend charters; to issue all dispensations for new associations—except as hereafter provided for new associations under the provincial association; to receive and decide appeals; to redress all grievances arising in the society; to originate and regulate the means of its own support; to finally decide all questions arising out of the constitution and laws, rules and regulations of the Canadian, Provincial and Local Societies, and do all other legitimate acts expedient or necessary for the promotion of the interests and general welfare of the Society, being restricted only by such conditions and limitations as shall hereafter be set forth.

(3) Its officers shall consist of a President, Vice-President, and the Secretary-Treasurer.

The Executive Committee shall consist of the officers, the retiring President, and the Vice-Presidents from any Province represented in the Association, who shall be elected at the annual meeting. The President shall be Chairman of the Executive Committee.

## Nomination and Election.

(4) The nomination of officers shall take place at the annual session, immediately after the reading of the minutes at the morning session of the second day, the election and installation on the last day of the session.

## Representation.

(5) The Canadian Society of Domestic Sanitary and Heating Engineers shall consist of representatives from Local and Provincial Associations, and individual members in cities and towns where no Local or Provincial exist. Provincial Associations will be composed of Local Associations and of individual Master Engineers from cities and towns where no Local exists within their respective Provinces.

Every Local Association (excepting those within the jurisdiction of a Provincial Association) shall be entitled to one representative and one vote when the number is 5 or under, and one additional representative and vote for every additional 5 or major portion thereof.



A view of the interior of the shop of D. A. Ross, President of the Saskatoon Association—Also a view of the President himself.



Any Local not represented by a representative may be represented by proxy, provided the credentials of the same be signed by the President and Secretary of the Local, and the Local appointing such proxy shall forward to the Secretary at the meeting of the Canadian Society a copy of the Resolution appointing such proxy.

No representative shall represent more than one Local by proxy.

(6) Every Provincial Association shall be entitled to as many representatives and votes as a local within its jurisdiction would have been entitled to if such Provincial Association was not in existence, but no one Provincial or Local representative shall be entitled to more than 5 votes.

(7) Every member of the Executive Committee shall be entitled to one vote by virtue of his office, except those who vote as representatives of Provincial or Local Associations. Members from every City and Town where no Local or Provincial exist will have the same voice and vote as a regular delegate, they paying the usual capitation tax direct to the Secretary of the Canadian Society. All delegates attending those meetings must be provided with credentials signed by the President and Secretary of the Local or Provincial Association to which he is attached, and said credentials must be in the hands of the Secretary before the opening of the first meeting. No individual member or members will be admitted to membership from cities where associations are organized and in affiliation with the Cana-

dian Society, nor from Provinces where Provincial Associations are organized and represented as prescribed in Article 5, first clause.

(8) All Locals in any Province must be affiliated with their respective Provincial Associations, if such exist, in order to be recognized and have membership in the Canadian Society of Domestic Sanitary and Heating Engineers. Only one Association will be recognized in any one City or Town.

(9) The President, Vice-President and Secretary-Treasurer of the Canadian Society of Domestic Sanitary and Heating Engineers shall receive their travelling expenses and the sum of four dollars per diem for every day in attendance at meetings.

(10) Religious and Political questions shall be utterly excluded from the debates and other exercises of this Association.

(11) All amendments to this Constitution shall be proposed in writing; two-thirds majority shall be required for their adoption.

(12) Nothing in Article 11 shall prevent a change in the Constitution, provided the same meets with the unanimous consent of the members present at an annual or special meeting.

(13) The general revenue of this Society shall not be for accumulation, but shall be raised for the purpose of defraying the actual necessary expenses incurred by the Canadian Society. The amount of the capitation tax shall be struck by the annual meeting, or by the Executive Committee, within 30

days after the close of the last session.

(14) The annual election of officers for the ensuing year shall be held at the Annual Convention, convened at the time and place declared by the Association at the preceding convention—the term of office to begin immediately upon the election to and acceptance of the office.

(15) The Officers shall be elected by ballot, and each officer elected shall have a majority of the votes cast.

(16) A constitutional quorum of the Association shall consist of ten members in good standing.

(17) The Association shall be governed by the Parliamentary law as laid down in Bar's Manual, when it does not conflict with the Constitution and By-laws.

(18) All Associations in arrears with their dues shall be dealt with by the Canadian Society of Domestic Sanitary and Heating Engineers annually, as in its wisdom it may deem best.

(19) Each Local and Provincial when organized will at once notify the Secretary of the Canadian Society, giving the names of its officers and members.

(20) The duties of the Officers of this Association shall be the same as in all Civic Societies—unless otherwise specified by the Constitution and By-laws. The Vice-President taking the Chair in the absence of the President, and should both of these Officers be absent, the Officer next in order mentioned in the Constitution will call the Association to order, and the members shall elect a temporary Chairman.

# The Importance of the Sanitary Craft

Public Beginning to Realize the Fact That Scientific Knowledge is Required—Article in New York Sun Deals With Some of the Problems Which Face the Plumber To-day and the Methods Adopted to Overcome Them—Plumbing Referred to as a Science and an Art.

THERE is a tendency noted to-day on the part of the public to give the plumber his due. People are beginning to realize the importance of his work and to see that sanitary installation has become a science. Evidences of this better feeling are creeping in wherever references in print are made to the plumbing craft. The following article is reproduced from the New York Sun. It appeared under the heading, "Plumbing a Science and an Art To-day."

"Plumbing is not a trade, it is a profession," explained an expert in that line, and he continued: "In the old days any one who knew how to solder a joint or fit a washer was allowed to practise what was then a trade. With the march of progress and the erecting in the city of the modern skyscraper came

the need for something more than ordinary knowledge of pipes and solder.

"Careful calculations were needed to ascertain the pressure that certain pipes would stand, the proper way to secure good drainage and other problems which called for a thinker more than a mere mechanic. Then came the board of health with its demands that all plumbers for the sake of the public health be responsible men and men who knew their business.

"All this happened a number of years ago. The city authorized the mayor to appoint a committee to hold examinations to ascertain the degree of proficiency to which a plumber had attained before he received a license.

"This brought the master plumber, and to-day there are more than 30,000

in the United States. Only a master plumber may take a contract for piping and installing sanitary fixtures and the like in a building. This master plumber may employ journeymen or apprentices to do the work, but he himself is responsible."

There have been established in this city in the last few years several schools where a course in plumbing is taught. Chief among these is the New York City Trade School, an endowed institution.

A graduate of a plumbing course has a general knowledge of engineering and, as the expert stated, is a professional man. He must be able to calculate the amount of expansion and contraction certain pipes of various metals will undergo under varying conditions. He



must know how to ascertain and relieve the enormous pressure to which pipes installed in office buildings are subjected when a discharge is emptied into them from one of the upper floors. Other problems requiring much thought and far more difficult are daily presented to him, and in order to secure the best results and make a building safe and sanitary a thorough knowledge of all engineering rules and tactics is required.

The necessity for thinking men in the business has also increased the roll of master plumbers and to-day the association of master plumbers is one of the largest associations in the world.

With the developing of the mechanical end of the business has come a beautifying element. Artists in their line have taken a hand and the result is that no longer in modern plumbing are seen the unsightly objects of years ago. Ornamental fixtures and polished metals have taken the place of mere lead and iron pipes and bare porcelains.

One of the greatest pieces of modern plumbing is now under course of construction in this city. This is the installing of water and sanitary fixtures in the Woolworth Building, which will be the tallest building in the world. Many difficult problems have confronted and still continue to confront the master plumbers who have undertaken the contract.

In installing the plumbing in this mountain of granite more than fifty miles of piping will be used and the cost will amount to more than \$100,000. All sewer connections in the building will be carried to the public sewers and all plumbing fixtures above the basement will have a system of gravity drainage. Nine large cast iron sewer pipes will run into the public sewers from the basement of the building and in the sub-basement will be two large auxiliary tanks. To each sewerage tank will be attached a centrifugal pump to lift waste to the level of the public sewers.

In the piping of this building comes the plumber's art. Special precautions must be taken to make provision for the expansion and contraction of vertical pipes and prevent strain in the branch connections and fittings. Special methods of hanging and supporting the pipes will be employed. Offsets will be made in all drainage and vent pipes to allow a swing joint in every twelve stories of height.

All vertical pipes of every kind will have an expansion offset in the form of a loop once in every six stories of height.

As the building goes up the extensive fire system that is being installed will be kept ready for use as each floor is completed and will be ready at all times in case of fire.

In any building of the type of the Woolworth Building it is impossible to estimate exactly the number of fixtures that will be installed.

One of the greatest and largest systems of plumbing ever installed in a public building, according to those in authority, has been put in the new Pennsylvania station. Fifty-one miles of piping have been used in the water supply and drainage alone and 110 plumbers were employed for the installation.

The work was done by the Whitehall Plumbing Company.

One of the chief difficulties to be met in the installation of the plumbing in this structure was the fact that most of the fixtures, pipes and tanks were set below the level of the public sewers and about fifty feet below the street level. This necessitated the installing of pumps, most of which were centrifugal, to raise the waste matter.

In this building two of the toilets are said to contain more fixtures than any other similar rooms in the world. The entire building is supplied with automatic instantaneous steam heaters.

One of the most interesting features of the plumbing of this building is the discharge of rain water from the roof. The lead pipes from the roof are connected with four mains, two of which are thirty inches in diameter and which lead direct to the public sewers.

Every department of this station has its own sanitary accommodations. Running throughout the entire building are pipe tunnels. These tunnels are large enough to admit a man, thus making all piping accessible.

Another example of modern plumbing on a large scale is that in the new Vanderbilt Hotel, at the corner of Thirty-fourth street and Park avenue. In this hostelry has been installed at a cost of thousands of dollars a complete modern system of fire protection in addition to the regulation sanitary plumbing. As required by the Fire Department and Board of Fire Underwriters, iron piping has been run throughout the building and on each floor are fire plugs. In the basement, more than fifty feet below the street level, are a number of centrifugal pumps to be used in case of emergency. Another emergency fire protection is the installing of two large tanks of 21,000 gallons capacity each, one on the roof and one in the basement. To each of these is connected a pump equal in power to the most efficient fire engine.

Not only is brain work required in the proper plumbing of a public building but it is required as well in the installing of sanitary fixtures in private residences. The more extensive the residence the more difficult the task.

For example take the big residence, now nearing completion of James B.

Duke, at the corner of Fifth avenue and Seventy-eighth street. Throughout this house the plumbing is of the highest quality and fixtures the best that could be obtained. Yet here, according to the plumbers, there were few engineering problems to be solved. The building not being of any great height, the calculations of pipe pressure were done away with, but the work that was eliminated by the size of the building was more than made up in the care and artistic effort that had to be put forth in order to make everything presentable to the eye.

Here, as in other buildings, after the system had been installed it was required to pass the inspection of the Board of Health and a certificate of approval had to be obtained.

Comparatively new in the field of plumbing is the progress made in the manufacture of the sanitary drinking cup. A few years ago these were classed as novelties and their manufacture carried on in a spasmodic manner. The drinking cup industry to-day is a major one. The growth is due to the advance made in movement for complete sanitation.

Several State legislatures have passed laws forbidding public drinking cups in factories and public places and in most of these states these laws are enforced. This year the law goes into effect in many new communities. The movement has been particularly noticeable in the middle West and this, combined with the marketing facilities of Chicago, has taken the industry there.

### Death of J. W. Hughes.

The Montreal Master Plumbers' Association has sustained a severe loss in the death of one of their oldest members, J. W. Hughes, head of J. W. Hughes & Son, Craig street. Mr. Hughes has been ailing for some little time, but it was not thought the end would come so soon.

Born in London, Mr. Hughes came to Canada early in life, and started as an apprentice in the plumbing business. He rose quickly, and finally worked up the fine business which he leaves to-day.

Mr. Hughes was a man of wide interests. A member of the Masonic order, he went through the various chairs. He was also a member of the Royal Guardians, and was president of the People's Mutual Building Society.

For sport Mr. Hughes took to curling, being an enthusiastic member of the Caledonian Curling Club.

But it was through his connection with the Master Plumbers' Association that Mr. Hughes was best known to his fellow craftsmen.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, MAY 15, 1912

THE DATE of the national convention at Calgary draws on apace. In a month's time those who are to attend will be preparing for the trip. It is not too soon, therefore, to urge upon members of the trade that they should make every effort to be on

**ATTEND THE CONVENTION.** hand. The convention will be a crucial one. Much important business will be up for consideration, and questions of wide import will be discussed. It is necessary, therefore, that the attendance be large and representative of all sections of the country.

As an extra inducement, it may be pointed out that this is a splendid opportunity to see the West. A low railroad fare will be secured, and the delegates will have a splendid opportunity to see something of the country.

THE WIDE recognition accorded to the need for efficiency is demonstrated by the organization of a body in New York to be known as "The American Society for Promoting Efficiency." The object of this society, according to its constitution, is "the pro-

**TO PROMOTE EFFICIENCY.** motion of efficiency, or the highest result obtainable relative to the effort expended, in every activity of man." It is open to anyone who takes a genuine interest in the question of the improvement of effort and result. The directors will investigate into every field of activity with the purpose of finding new methods and better systems.

Already a number of men of international reputation have become interested in the movement, and it is becoming apparent that the work will be furthered by some of the best intellects in the world. The project is a gigantic one, but the committees now at work can be depended upon to unearth a vast amount of valuable and practical information.

ONE OF THE most significant evidences of the general prosperity existing in all lines of trade in Canada is the fact that there has been little disturbance in labor conditions this spring. As a general thing, May-day finds

**CONDITIONS ARE SOUND.** the trades more or less in a state of disruption, the journeymen demanding increased wages, the employers breathing defiance. It is not uncommon for business in the larger cities to be disturbed in early spring by a succession of strikes of more or less lengthy duration. Toronto has seen no fewer than fourteen strikes in different trades at the same time.

While there have been strikes this spring, and some are still pending, for that matter, the situation has been exceptionally quiet. Demands for better wages have been advanced by the men, but the differences have been settled amicably and satisfactorily.

This is a striking evidence of prosperous conditions. The fact that higher scales have been fixed without demur in many cases shows the financial soundness of the employing interests and the confidence with which they regard the future.

A VAST WASTE of energy is being continuously expended to repair the damage done by inexperienced people attempting to depart from customs and standards from which departure cannot be widely made without disaster.

### SUPPORT OF STANDARDS.

Too frequently those who wish to accomplish some purpose pay little attention to the effect it may have on others and not infrequently their so-called enterprise results in failure from running counter to a current which is too strong for them. Enterprise is welcome, even among those who adhere most closely to the established customs and standards, and is safely made only when all factors bearing on the new venture are carefully considered and the departure is made in harmony with them, or so that those who are accustomed and familiar with common practice can take up the new practice naturally and advantageously. Manufacturers frequently suffer from some one or several competitors in the same field rashly starting out in a new direction, which results in a general demoralization, and eventually compels the abandonment of the new movement. Again, some members of an association feel that all is not being done which they desire, and instead of learning whether or not what they would like to carry out is practicable they secure some followers and start another association, to the ultimate disadvantage of both. It is not uncommon for some superficial observer in some field to lay down a new line of practice, which, with his individual experience, he is able to carry to success, but which others, who think they can see an advantage in a departure from old rules, make their customers suffer with them when, through their want of conversancy with the new plan they fail to make it work out successfully. There is opportunity for the occupation of all the enterprise which progressive men may desire to put in practice, but there is every reason for them to be thoroughly conversant with the standards and customs that are followed and the cause of their establishment before a departure from such standards is attempted.—Metal Worker.



# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

WE haven't the faintest notion of how Ed. Higginbottom, of Fort William, votes, but we are in a position to assert that he believes in reciprocity. This is how we know:

Some years ago Ed. was in Toronto, and Laurie Anthes took him out for a spin in his motor car. Just to show the westerner what the east can do in the way of speed, Laurie let out a notch or two and had the Fort William man hanging on to his seat for dear life. They were going fast but not too fast for a policeman to pick out the number. The magistrate made it \$15.

Ed. decided that exceeding speed limits was a sport after his own heart and, as business had been pretty good in the growing and prosperous city of Fort William (see civic literature), he invested in a car of his own. Some time after, Laurie Anthes stopped off in Fort William, and Ed. invited him to go for a spin in the new car. Just to prove that the effete east has nothing on the woolly west, Ed. finished up the legal six miles in the first twelve minutes or so. It is a coincidence when a county constable, a stop watch and a speeding motorist are found on the same back concession. They were all there on this occasion and the coincidence cost Ed. \$5 and costs.

That is what one might safely term reciprocity. However, it's not the only kind of reciprocity that Ed. Higginbottom believes in. He is strong for association work, which is reciprocity in the extending of mutual assistance, in ideas and in furthering the interests of the trade. He has worked hard to keep up the local association at the Fort, and has also been a prominent figure at the national conventions. For the past two years he has been treasurer of that body.

At the present time Ed. has the motor mania. It's a disease which gets everyone more or less who can afford it and the seriousness of the attack depends solely upon the amount of time that the patient can afford to give to it. Ed. gives up nearly every minute after work hours to the pastime of breaking speed records. The people of Fort William and Port Arthur never need fear dying of hydrophobia for Ed. Higginbottom has hit every dog within a radius of a gallon of gasoline from the Twin Cities.

During the national convention last year, he toted the delegates around a great deal and showed them what a real cherky benzine buggy can do when there's a good driver at the wheel. One afternoon he took Harry Mahoney and a few others over to the meeting hall



The people of Fort William and Port Arthur never need fear dying of hydrophobia for Ed. Higginbottom has hit every dog within a radius of a gallon of gasoline from the Twin Cities.

and, as they were a little late, he did the distance in jig time. The passengers found the tonneau a good substitute for a cyclone cellar and ducked down until the machine came to a stop. "You have a good machine, Ed." said Harry Mahoney, as he crawled out. "But, holy mackerel, what have you got so many wheels on it for? We only used two coming over."

Motoring is only one of the occupations that he follows in his spare time. He is a military man, an enthusiastic angler, and a lodge man. The last clause was added as an after thought but, come to think of it, it's only natural that a man who runs an automobile, goes fishing and belongs to the militia, should belong to lodges. Think of the excuses he needs.

Ed's military experience has been both long and arduous. He was sergeant for seven years with the 6th Fusiliers at Montreal. When the Boer war broke out Ed. went with the Canadian Mounted Rifles and saw active service. He did his full share in the strenuous work of that memorable time. After returning to Canada he went west and became color-sergeant of the 96th Lake Superior Regiment.

It would not do to pass over his exploits in the angling line without a word. He can whip a trout fly through the alders with anyone. There is some fine fishing up around the Twin Cities and some pretty fair fishermen, too. Ed. Higginbottom is one of them. It is hinted that he is an even better raconteur than angler, but this is a boost instead of a knock. Every finished fisherman must be able to tell a story with Kiplingesque skill.

Now for some facts. Edward Dunlop Higginbottom is a product of Montreal. He learned his trade in that city with McCrae & Watson, and was afterwards employed with other well-known firms. He got a good grounding in the trade; for wasn't he helper to John Gordon for a time? After going west he was foreman for Alex. Cameron, of Fort William, for some years. Then the phenomenal development of the West opened up such opportunities in a trade way that Ed. decided to get his share. He started business on his own hook and has been very successful. He now has a good business, employing quite a large staff of men and is quite as prosperous as most of the men in that inimitable West. He's a good fellow and a good plumber, and that's the highest praise we can think of.

All who go to Calgary this year should hunt up "Ed. Hig." He'll be there and it's our one best bet that he'll take his machine with him.

## New Plumbing Firms.

Medicine Hat.—A new plumbing and heating firm known as the Western Plumbing Co., have opened up a shop at 602 Main street. The members of the firm are Messrs. MacDonald and MacLean.

Toronto.—Harry Pepper has disposed of his business to James Harland.

Winnipeg.—Two new firms have started here in the plumbing line. Jas. Brown is starting in business. The Hamilton Plumbing Co., have been incorporated.





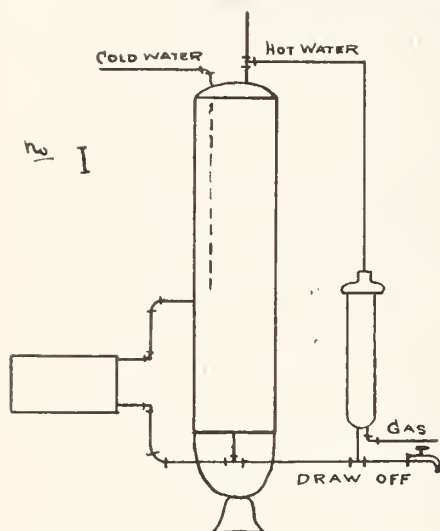
# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## GAS AND COOK STOVE CONNECTION.

Editor Plumber and Steamfitter: Will you kindly show me by illustration just how to connect up a gas heater and water front to the same range boiler, so that either will work separately?—James G. Hoyt.



In Fig. 1 we show how this may be accomplished. The figure explains itself, and needs no further comment by us.—D.C.H.

## HEATING WATER FOR BATHING POOLS.

Editor Plumber and Steamfitter: Will you be kind enough to mention some of the different ways that are used to heat pools for bathing or swimming and greatly oblige?—J. P. J.

There are several different methods of employed, all more or less adaptable to different situations. We will mention some of them for the readers' benefit. Such pools may be heated by steam coils, which are placed conveniently below the surface of the water. Another way is to inject live steam into the water through a specially prepared nozzle. The water may be heated by hot water heaters or by water that has been warmed in different mechanical manners. Sometimes steam and hot water heaters in combination are used; then again, live or exhaust steam in feed

water heaters is sometimes employed. Taken all in all, it will be seen that there are plenty of ways in which the water can be heated. The point of just which system to use to the best advantage must be determined by the heating contractor from his knowledge of local needs, and also backed by his past experience or knowledge.—D.C.H.

## HOW TRAPS ARE SYPHONED?

Editor Plumber and Steamfitter: Will you tell me how a trap can be syphoned?—Apprentice.

One way is where another fixture is discharged and the discharge entirely fills the waste pipe. This tends to cause a partial vacuum, which affects the water seal in the fixture that is syphoned. It is almost certain to happen if proper traps are not used, or if they are not back vented, or if the stack is not run through the roof, as sometimes happens through the ignorance or cupidity of the contractor having no ordinance to compel such an installation.—D.C.H.

## SETTING THE HEATING BOILER.

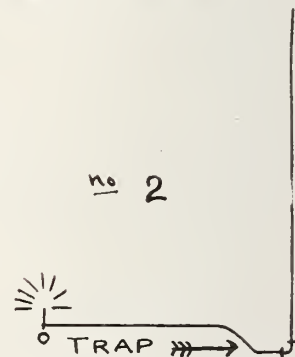
Editor Plumber and Steamfitter: About how long a time is necessary, and how much help is necessary, to set up a fair sized heating boiler? You must have heard this question discussed, and I should like to read any information you care to print upon the subject.—S. C. G.

There are various different forms of boilers, some requiring more and some less "help" to set up. In an ordinary house boiler consisting of base, firepot, a ring or two and the dome, two husky men should be sufficient. It is not so much a matter of muscle as it is in knowing just how to apply one's strength at the right moment. Set the base securely as the first move. The firepot can be easily rolled along a plank and then canted to place. The rings are not very heavy, and can be made up by one man, while the other holds the firepot from turning. If the dome is first lifted upon the head of a barrel, the men will have a chance to get a more secure hold upon it before setting it upon the

top ring, which has been made up. Look the job over and use some good old "horse sense." A job similar to the one mentioned should not take over two hours at the most. Many times it has been done in an hour or less.—D.C.H.

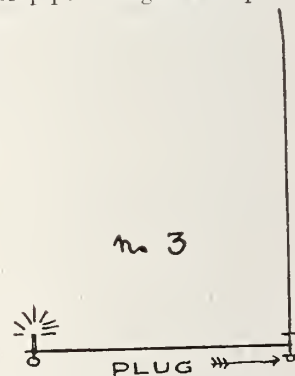
## GAS FIXTURES DON'T WORK RIGHT.

Editor Plumber and Steamfitter: I enclose a drawing (Fig. 2) of a gas jet that frequently gets out of order in as



much as it stops up. How shall I remedy it?—C. E. H.

We show the remedy in Drawing 3. Run the pipe straight and place a tee



where shown and plug. For that matter, a tee and plug can be put on the other job (Fig. 2), but it is trapped and will always collect water.—D.C.H.

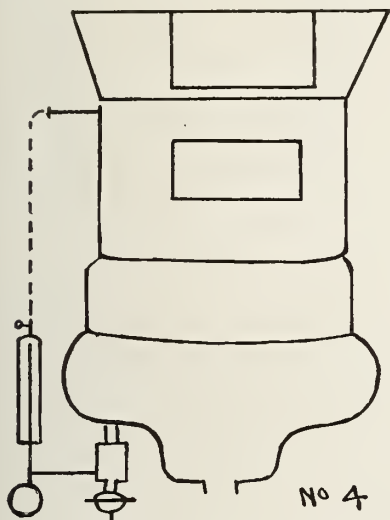
## RANGE BOILER HOOKED UP HORIZONTALLY.

Editor Plumber and Steamfitter: Is it possible to connect up a range boiler horizontally without tapping out any new holes and plugging? If so, tell how.—J. G. Calihan.

It is possible, but some of the boilers we have observed so set, do not seem to heat up very rapidly. Sling the boiler in strong iron straps with the side opening looking down. To this side opening connect the lower opening of the water front. The top opening of the water front will be connected to what was the bottom hole of the range boiler. At the other end (which was the top) connect the cold water supply, using the inside cold water tube, cut somewhat shorter than usual, and the remaining hole will be the hot water supply to the fixtures. We cannot strongly recommend this job, as there are plenty of hot water tanks on the market already tapped and ready to be connected, and we believe it would be cheaper and more satisfactory to get such a tank at the start rather than to experiment.—D.C.H.

#### WATER GLASS CONNECTION.

Editor Plumber and Steamfitter: I have a water glass connection on a house boiler, as shown by dotted line in Fig. 4.—The water line is very unre-



liable. Would it be any more stable if connected into the bottom of steam dome as shown?—G. A. Jewell.

It certainly would. The connection shown by the dotted line is a bad one, and it has been our observation that when water glasses are so connected, no dependence can be placed upon the waters registering correctly. The second connection is much the better.—D.C.H.

#### SUPPLY PIPE IS AIR BOUND.

Editor Plumber and Steamfitter: I put pipes around a door so as to connect the range boiler (as shown in Fig. 5) and sometimes it does not work very well. Will you show me how it could be made to work better?—J. P. Hamilton.

As connected up in Fig. 5, there is a good chance for the pipes to become air bound, especially if they are run of small size. If the change is made in

the run of the pipe, as shown in Fig. 6, it can be seen that no air will stay in the pipe over the door, for every time a faucet is opened, the pipe will be

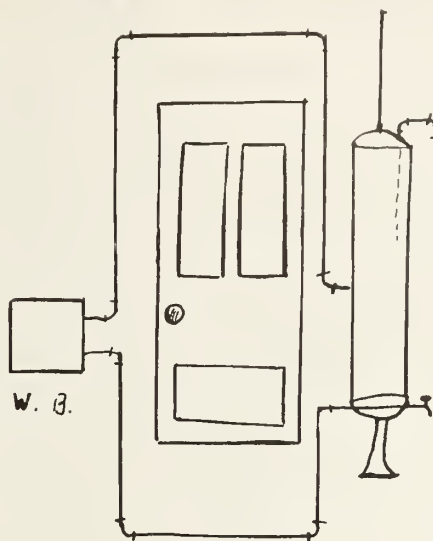


Fig 5.

cleared of air. As shown in Fig. 5, the pipe over the door forms a loop in which the air easily collects.—D.C.H.

#### DOUBLE TRAPPING?

Editor Plumber and Steamfitter: If one trap on the house sewer from house to main is good, would not two traps be better?—Inquiry.

We do not think two traps would be a success. There would be a certain amount of air in the pipe between the two seals, which would tend to form an air lock quite liable to check the flow of water through the traps. Besides you would be only multiplying nuisances. If one trap is a nuisance to keep from stopping up, you'd have to work just twice as hard to keep both clean. It's a poor rule that won't work both ways. Besides, what's the necessity for any main trap at all? In many cities to-

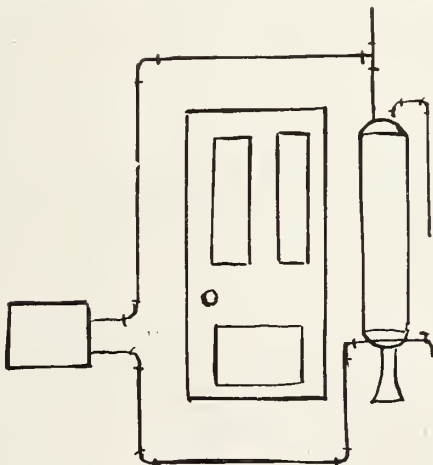


Fig. 6.

day they are positively not allowed by sanitarians, who are supposed to be strictly up-to-date.—D.C.H.

#### THE TRAP SEAL.

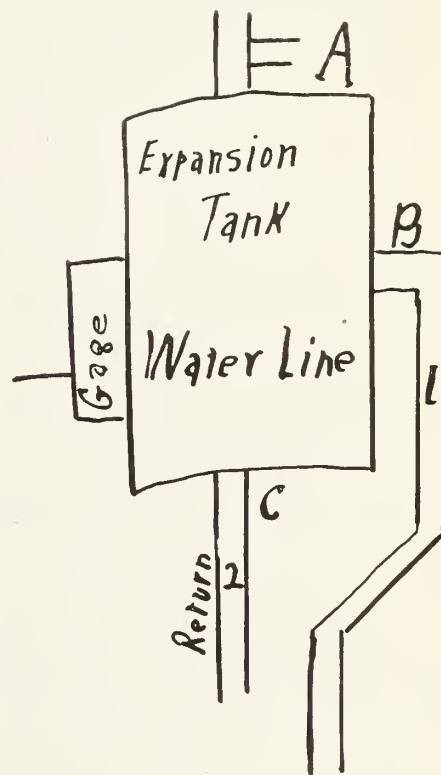
Editor Plumber and Steamfitter: Will you be kind enough to give me a definition of a trap seal?—Beginner.

The seal of a trap may be defined as the depth of water which is between the dip and the outlet of the trap. The efficiency of a trap depends upon the sureness of its seal and its ability to resist being siphoned.—D.C.H.

#### WHY THE SIDE PIPE IS USED.

Editor Plumber and Steamfitter: What is the reason for using the second pipe ("B" as show in the sketch) on the expansion tank?—A Subscriber.

If there was an overflow at point "A," as is suggested in the sketch, we



presume that the man who installed the apparatus intended the pipe at "B" to act as a tell tale for showing the amount of water in the tank.—D.C.H.

#### With the Shriners.

George Blake, of St. John, N.B., is on a pilgrimage to the Shriners' convention in Los Angeles.

Calgary.—Frew & Fleming, tinsmiths, have opened a branch at Hillhurst.

Craik, Sask.—R. J. McNaughton, tinsmith, has added a line of hardware.

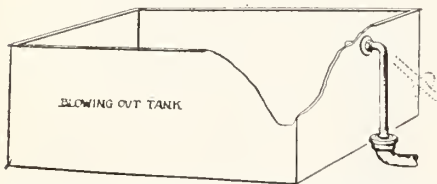


# Factory Sanitation and Ventilation

THE following interesting address was delivered by Philip Mueller, of the H. Mueller Manufacturing Co., Decatur, Ill., at a meeting of the American Society of Plumbing and Sanitary Engineers. It dealt with the problems of factory sanitation and ventilation in a comprehensive way. The drawings are reproduced from the Plumbers' Trade Journal.

Mr. Mueller said in part:

"Let us begin with the foundry, in our case at Decatur, Ill., a brass foundry. The character of that work makes the drainage question a serious problem be-



Method of taking out overflow pipe from sand pocket for cleaning out purposes.

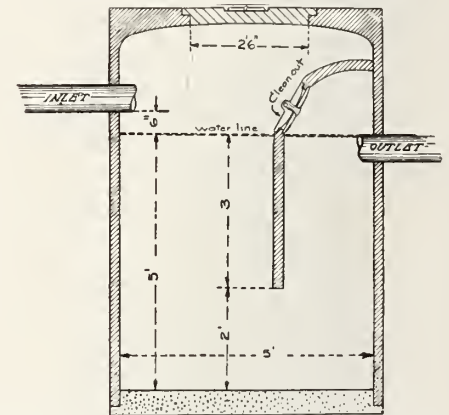
cause of the large volume of sand in the waste water to be disposed of, yet we have solved it in a way that gives us no trouble. In case of stoppage it is a matter of a few moments to remove the obstruction and again secure an uninterrupted flow of water. The drop in the sewer and the ample provision of clean-outs and traps are responsible for this satisfactory condition of affairs. All sewers in the buildings should be of cast-iron pipe calked with lead and run to a point ten feet outside of the building.

"This floor plan will give an idea of the general arrangement with toilet and locker room here. The main sewer is 6 inches in diameter. There are six clean-outs or sand pockets, each 24 inches in diameter, one being at the end of the straight or main sewer, another just back of the second double "Y" connection. This last clean-out would preferably be placed over the centre of the double "Y" connection, provided you could get such connection with a side opening. The other four are so placed as to make access easy to any discharge pipe between the blowing-out tanks and the main sewer. These sand pockets are of sufficient capacity to accommodate additional blowing out tanks in case it is desired to install them. The disposition of those sand pockets which also serve as clean-outs, enables us to get at any portion of the system on a moment's notice. Here is a sectional view of the sand pocket and cleanout as used in our foundry.

"The main sand trap is just inside of the factory wall with the discharge running direct to the city sewer. This trap is built of concrete. It is five feet in diameter and seven feet in length. The inlet pipe is six inches above the outlet and the division or trap-forming wall comes to within two feet of the bottom of the trap. Whenever we get a depth of a little more than two feet of sand in this trap, the water backs up of course, and we clean the trap through the 2½ foot manhole. To meet the pos-

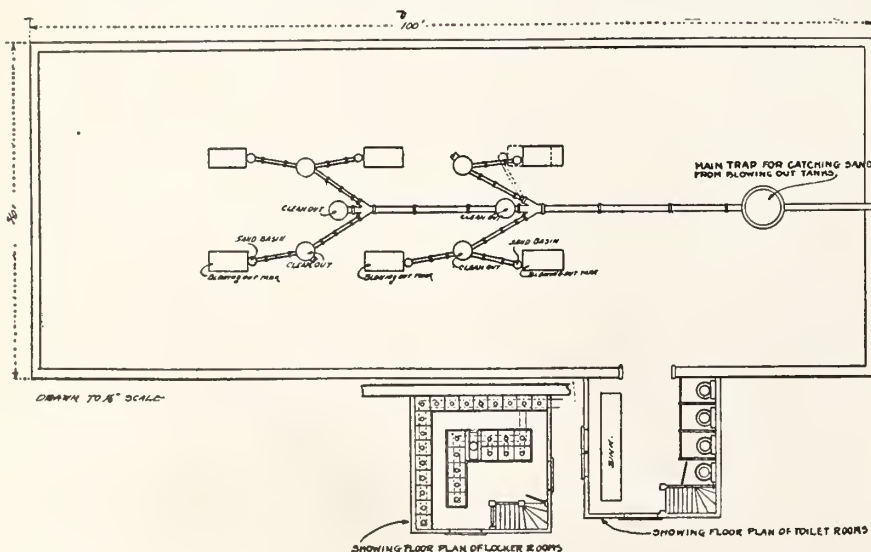
sibility of the outlet becoming clogged, a clean-out has been placed here through which it is a simple matter to push a clean-out rod.

"The overflow for the blowing-out tanks is connected with an elbow by a reducing slip-joint connection which enables us to lift the reducing slip-joint or cover and throw the overflow pipe to one

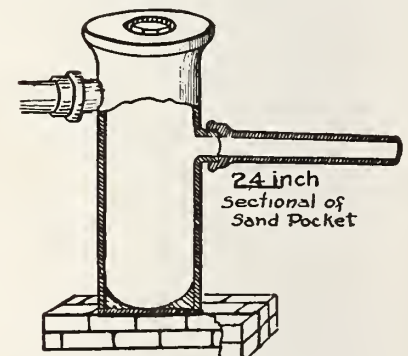


Detail of main sand trap for blowing-out tanks for foundry.

side. This gives us an unobstructed space to clean the drain-pipe between the elbow and the sand pocket. When it is necessary to clean the accumulation of sand from the blowing-out tank this overflow pipe is merely thrown aside, the water removed by syphonage and discharged into the elbow. The whole operation requires but a short time and the



Floor plan of foundry sewage system.



Style of cleanout used.

readjustment of the overflow is a matter of only a few seconds.

"I have found this system of factory sewerage entirely satisfactory, not only in the foundry where the water is charged with sand, but in the rattling room where brass chips and dust are carried to

the trap. These sand pockets in the foundry and trap therefore serve a double purpose in making it easy to keep the system open at all times and in catching the deposit of brass which is saved and becomes a valuable by-product. The proper and free distribution of traps and clean-outs is a most important factor in any system of factory sewerage. It is the part of wisdom to anticipate any trouble that may arise and be ready for it when it does come. The expense of providing clean-outs and traps is insignificant compared to the time and expense that can be saved when an obstruction occurs.

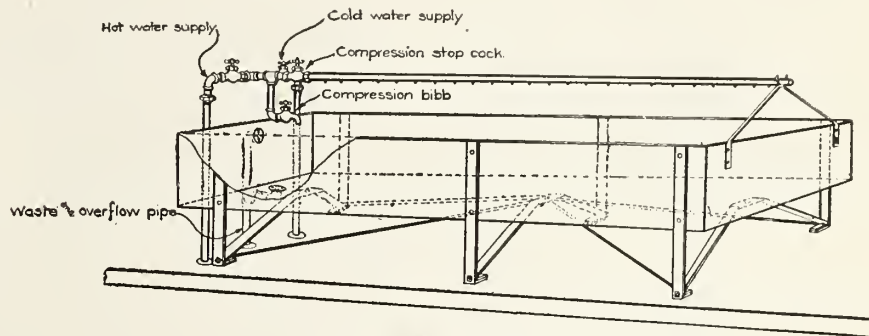
"The toilet room should be of the best type. I would have tiled floors with marble sides which means that they would not only be easily kept in sanitary condition but would be practically indestructible. The toilet room here shown in connection with the foundry is two storeys in height, the closets and wash-up room being on the first floor and the locker room above. The heating and ventilating of these rooms is by means of a blower or fan system which supplies cool air in summer and warm air in winter. The inlet to the system is from the outside away from all gas, smoke or objectionable odors, insuring fresh air at all times.

"This pipe at the ceiling is connected to the blower or fan system, making provision for supplying fresh air to the lockers. In the floor of each locker is a 1¼ inch opening through which the fresh air passes. This continual passage of fresh air in a large degree removes the odors natural to the clothing of men who have worked hard, aids in drying and purifying the clothes as

well as the entire locker rooms, and is then carried out through this discharge pipe which has a double opening at the floor and also at the ceiling with dampers at the ceiling openings. The pipe has a specially devised ventilating hood which insures a suction at all times regardless of the way the air currents strike the hood.

"In the toilet room I would use a high grade bowl with a local vent, the bowls being arranged in batteries of fours, with the local vents carried to a main

"This view of the wash-up sink shows it in detail. It is of a type we now use in our factory and in future additions which we shall make will be continued. The men like it, and I believe it is the most practical and sanitary arrangement that can be provided. It is supplied with hot and cold water, with a compression stop cock here to shut off both supplies when desired. Dropping down here from this tee is a compression hose bibb to which hose can be attached for cleaning the floor or from which water



Detail of Wash tank.

pipe with a ventilating hood. Opposite the closet is an open wash-up sink supplied with hot water and cold water. The location of the wash-up sink is a matter of choice. It might just as well be on the locker room floor if desired.

"Entrance to this toilet room is through a large arch which gives the foreman a clear view into the room and enables him to prevent the common practice of gossiping and visiting of employes. At the same time the closet is back out of sight of the occasional visitor to the factory, a feature often overlooked.

may be drawn for any other purpose. In case of only one person washing up the bibb can be used with a consequent saving of water which could not be otherwise effected.

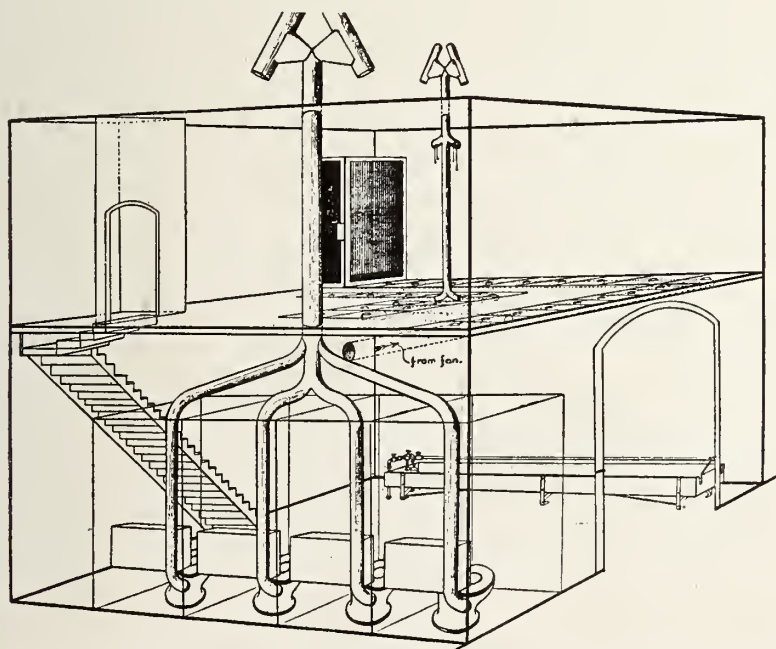
"This supply pipe running the full length of the sink has open brass nipples placed at regular intervals. When the workmen come to clean up they find the sink is half full of water, the waste having been closed temporarily. In this water they remove the worst of the dirt and grease.

#### OPEN NEW BRANCH.

In order to give better attention and meet the demands of their largely growing trade in the West, the Pease Foundry Company, of Toronto, have recently formed a subsidiary company in Vancouver under the title of the Pease Pacific Foundry Ltd., with head offices at 324 Drake St., Vancouver, where a large stock will be kept.

The officers of the Company are:— President, D. J. MacKinnon, (also President of the Pease Foundry Co., Toronto, and of the Pease-Walden Co., Winnipeg); Vice-President, Jas. Gill, Secretary-treasurer, T. B. Medforth (formerly chief accountant Pease Foundry Co., Toronto); Sales Manager, Wm. Crane (formerly Superintendent Pease Foundry Co., Ltd.)

All British Columbia business will be transacted by this company, which will be of great advantage to their customers.



Toilet and locker rooms showing fresh air supply and ventilating system.



# Complete Course of Sheet Metal Work

By L. W. KOSER

Problem 5, plate 13, illustrates a Y-joint in pipe. This can be a cut-off for a small conductor pipe, or a Y-joint for a large blower pipe. The size makes no difference.

The top piece P is straight and necessitates no pattern.

The pattern for the bottom is developed as explained for problem 1 and 2, plate 11.

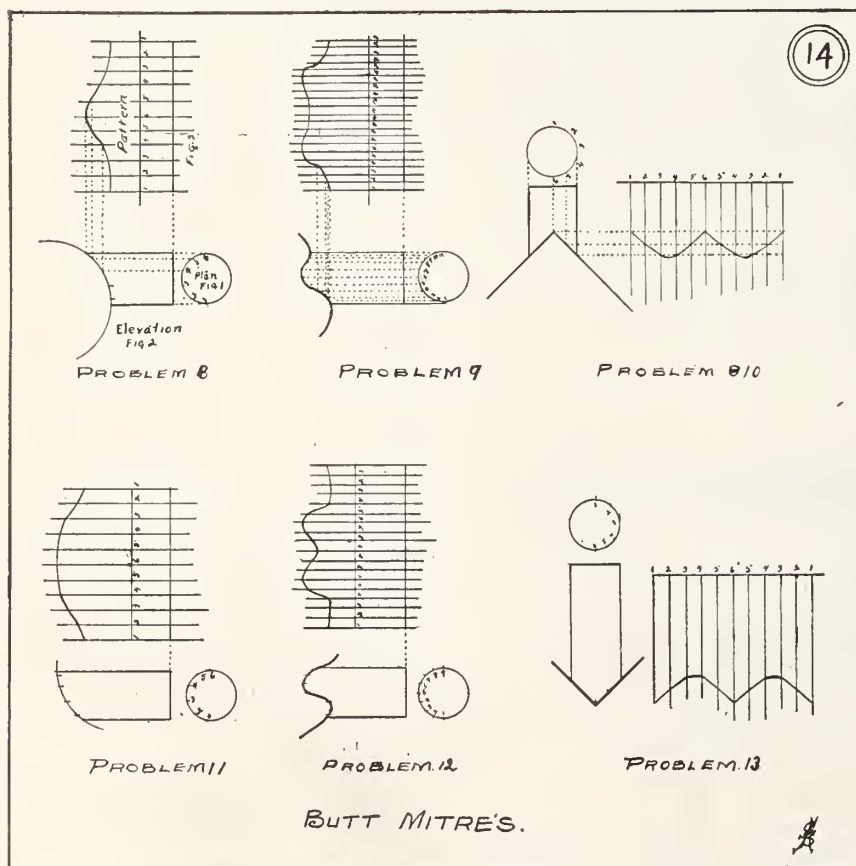
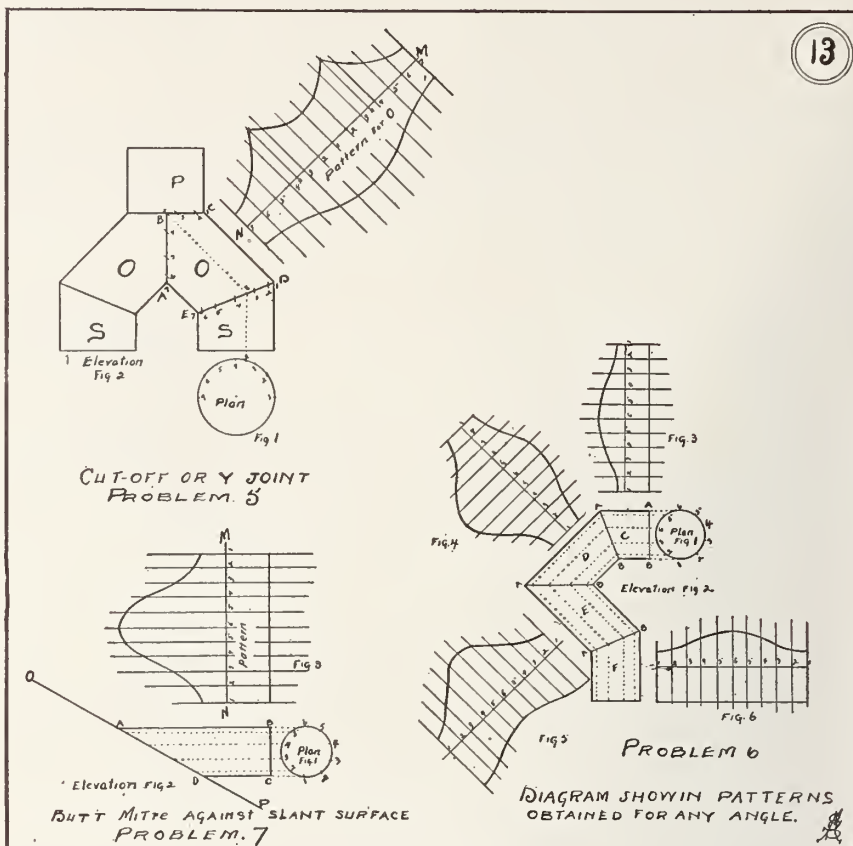
The gore piece O is very similar to the gore piece C, problem 3, plate 12, and is developed in practically the same manner.

Lay out the plan, Fig. 1; then the elevation Fig. 2; keeping one arm of the elevation in line and directly above the plan.

One half the plan is then stepped off and numbered as previously explained and vertical lines are carried from the numbers to the first mitre line E D, then parallel to C D, to the next mitre line A B C.

The stretchout N M is then laid out at right angles to the line C D and the usual measurement lines drawn.

The T-square is then placed so it will run parallel to N M. Bring it against each one of the points on the mitre lines, and cut the corresponding measurement lines.



In measuring off the plan of a Y-joint, it seldom happens that any of the regular lines come into the point B on Fig. 2, therefore to get the pattern extended up to this point, we draw a line from the point B parallel to the line C D, until it touches the mitre line E D. Then we drop it vertically to the plan Fig. 1, to get its position for the stretchout line.

We call this line "x" or anything to distinguish it from the stretchout line.

It will be noticed in this case that it comes between 3 and 4 on the plan.

Now we want a line on the stretchout to correspond to this line, to have the same position on the stretchout that it has on the plan, so we transfer the space X 3 or X 4 from the plan to the stretchout and draw the measurement line X.

The place the T-square parallel to the line N M, bring it against the point X or B on the elevation and cut out the measurement lines X on the stretchout. A line traced through the points on the measurement lines completes the pattern.

Problem 6, plate 13, shows elbows running in different directions. This example is intended for practice on what the student has gone through. The principle is the same as 2 and 3-piece elbows and serves to illustrate the different

shapes assumed by the pattern for different turns and angles.

Problem 7, plate 13, illustrates a pipe butting against a slanting surface and is called a Butt-mitre, and is developed the same as explained for problem 1 and 2, plate 11.

The plan Fig. 1 is drawn, then the elevation Fig. 2, then the stretchout

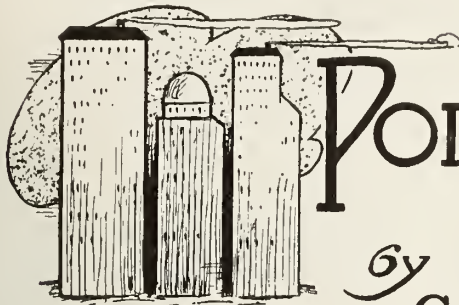
N M is laid out at right angles to the line A B.

Divide the plan off into equal spaces and carry the points to the slanting surface O P and then to the corresponding measurement lines; the pattern is then developed for the section A B C D.

It does not matter what the shape of the surface O P is like, or the shape of

the pipe or moulding. The principle of developing a Butt-mitre is the same. The pipe or moulding is divided into smaller spaces for irregular surfaces.

Problems 8 to 13, plate 14, are examples of Butt-mitres and are, as before mentioned, developed the same as explained for problem 7.



# POINTS ON HEATING

by  
CHAS. H. DENISON



## Chapter 30.

My plumber friend if you really want to become a salesman you will have to begin to study yourself. After you have made an exhaustive observation of this pleasing (?) subject, cast about a bit and study some of the methods of successful competitors. When you have found out, by practice, that you can talk a bit, make the talk systematic and logical. One great trouble with selling heating goods is that many a heating contractor does not know how to bring out the selling points of the article.

A whole lot of these fellows wouldn't know a selling point from a demijohn anyway. In fact they'd rather lean toward the demijohn. Now I want to describe a couple of things and perhaps you can then see for yourself just which way the wind blows, and why.

Scene 1. A plumbing shop. Perhaps it's clean and then again maybe it is not. The amount of stock on the floor is immaterial to our subject.

A lady or gentleman enters. The plumber comes forward. In some instances he'll be well dressed and then again his personal appearance may be far from attractive. Mainly he will have a grouch at being called to "tend store." Its useless to deny this for if there is one thing more than another that the bunch hate, it's showing goods, let alone any attempt at selling the same. Mr. or Mrs. Jones desires to inspect a lavatory, we will say. Well, the plumber has several fastened up against the wall. Perhaps they are more or less dirty and dusty, and we'll hope, for appearance sake, that they are passably clean.

"Here's this one for \$25 and this'll cost you \$30, and here's the best we have," he says, or perhaps a few words more. "I'm sure the \$25 one will suit you and we'll put it in all right." I

have heard that very conversation. Mrs. Jones, the customer went out.

Here is another picture. A certain party was sitting at home one evening after supper, when one of the neighbors called and had a catalogue with her. Together they went through the pages and chancing upon a lavatory page read about as follows:

"A lavatory different and far better than we have ever before placed on the market. The highest product of the skill and brains of our special designers. The apron slab and the bowl are cast in one piece and especially attractively enameled with the very acme of white choice enamel baked in with the greatest perfection and hardness. This beautiful and attractive product of modern genius measures 24x28 inches and is fastened by patented fastenings so that no brackets are visible. Can be kept clean and sanitary with the very least degree of work and will last many years. The best fittings to be obtained, only, are furnished with this lavatory.

"Highly nickelled with a special process and guaranteed not to peel off. The supply pipes are also finely nickelled and all fit the pipes which you can yourself install in a short time.

"Safe, sanitary, splendid. Order at once as our stock is limited. The goods will come to you promptly and arrive safely."

Then there's more, we will suppose about paying the bill—its cash you remember before goods are taken.

Now, as a responsible HUMAN BEING out to look after your own interests and being green to the game, I want to ask you which way you'd be more liable to jump. If you didn't know anything about plumbing and plumbing goods, etc., which offer would you, three times out of five, take?

The goods don't sell themselves for either party. Its the talking that does it and if any concern can put up a spiel on paper that sells goods unseen and for cash, then it only shows that their methods have got down or up to the point where they are directly in touch with human nature in such a way as to get direct, immediate cash results. The more shame for the plumber that's right on the spot mumbling a few words, now and then or separating himself from a few cuss words on lack of business. First, second and lastly the fault lies with the plumber, his want of foresight and his neglect to brighten up and take advantage of the opportunities that are thrust directly under his eyes by selling agents started toward him from points hundreds of miles away.

It is not beneath his dignity to pick up points when and where he can. If he refuses some of the tips he can pick up out of some of these catalogues, he is cutting off his nose to spite his face,

They sell the goods. He doesn't or can't. He neglects to dress his thoughts in attractive language. He don't know the selling points of an article nor how to arrange them in any kind of logical order. Is it any wonder then that the plumber has lost ground continually for the past few years? Indeed not. The wonder is that he is alive and in the game at all.

Learn to boost your goods. An inferior article, well described will sell far quicker than the best article ever that is indifferently exhibited. As to the after results—well that's a story for another chapter next time. Take a tip to start in on—Tell the customer the points of the article he can't see, or don't understand. Try it out and you'll be surprised at how you can talk and how thankful the customer will be.



# Methods of Sewage Disposal

By Charles W. Chandler, Toronto.

## Second Stage of Sewage Treatment.

The second stage of sewage treatment arises at the conversion of the dissolved organic matter into innocuous inorganic compounds or elements, which is always necessary wherever a high degree of purification of the sewage is required. It is accomplished either by land treatment or by treatment in artificial filter beds, and the action is largely aerobic—i.e., it is performed by more bacteria which require the presence of abundance of oxygen for their work. In recent years two forms of artificial bacteria beds have been used for the purification of sewage, namely:—

1. The contact beds, which are filled and emptied alternately.
2. The trickling, percolating or sprinkling filters through which sewage is passed intermittently and some times continuously.

Practical experience seems to point to the fact that in both types the process will be more effective if preceded by a preliminary treatment in a septic tank, for we then incur less danger of the clogging of the contact bed on the trickling filter. Some authorities, however, claim that preliminary treatment is not required in the case of the trickling filter.

Bacterial contact beds consist essentially of water-tight open tanks, filled with a material suitable for bacterial growth, provided at the top with sewage outlet and distributing trough, and at the bottom with open jointed drain pipes, and emptying pipe with valve. The object of the filling material is obviously to expose a maximum of surface alternately to sewage and air. Contact beds are charged with sewage by closing the outlet valve, and the sewage then left standing in the bed and in contact with the bacteria. From the mode of operation, the name of the process is derived. After some time the bed is emptied and left standing empty for oxidation and aeration, commonly called the resting period.

The purification process going on in bacterial contact beds is somewhat complex and difficult to define. The action is partly a mechanical or straining process by which the suspended matters carried over from the septic tank are arrested. It is chiefly, however, an oxidizing process of the organic matter accomplished through the agency of bacteria. The stones composing the filling material become covered on their surfaces with a gelatinous growth which contains the bacteria. In passing over this, the

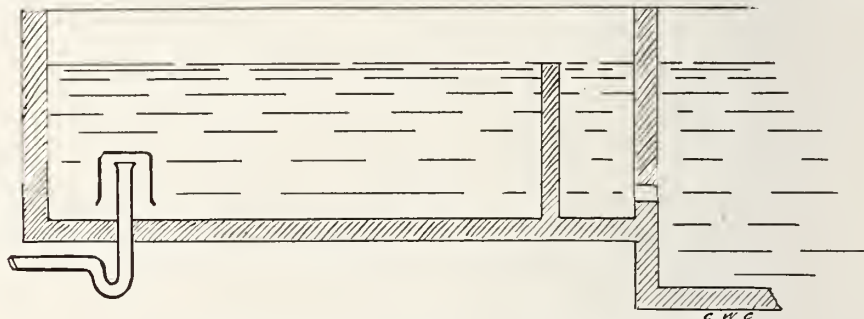
liquid sewage parts with a large portion of the material held in solution, a process designated by Dr. Dunbar, Professor Winslow and others as "adsorption." This is a very important and essential, but as yet little understood, part of the purifying process. The emptying and draining of the bed draws in oxygen with the air, which comes into intimate contact with the gelatinous growth, and the oxidation of the organic matter by the bacteria living in the same is thus accomplished. The regular cycle of operation in a contact bed is, 1, filling; 2, two hours standing full; 3, emptying; and 4, four or more hours of resting. A contact bed may receive three fillings in 24 hours, but it is more usual to fill a bed only twice a day as a better purification is thus obtained.

The average depth of the filling material in a contact bed is 4 feet, though some good results have been obtained with depths of 3 feet. The bed should

consist of a deep filter bed filled with broken stone and arranged with a view of obtaining the freest possible circulation of air through the bed. The sewage does not flow into the filter as in the contact bed, but it is sprayed or showered over it, and special devices, such as dropping cups, brass jets or sprinklers, are used for the purpose. The depth of filter should be at least 5 feet, and sometimes 8 and even 10 feet are used where the available fall permits.

## IMPROVING SEPTIC TANK.

"Plumber and Steamfitter.—You will find enclosed a new sketch of a septic tank that I referred to you last March which does not work as it should do. Will you kindly suggest me any idea that would help me. That septic tank is used for a club and serves for 3 W. C.'s, 2 urinals, 2 shower baths, 4 washing basins. There is no kitchen



Sketch showing method of improving septic tank.

be thoroughly aerated by allowing the air to find access to the interstices of the filling material. Experience has shown that it is a mistake to make the top layer of the bed of a finer material because this readily clogs. Sometimes aeration is accomplished by means of short earthen pipes, set vertically in the filter bed and projecting somewhat above the surface. Any hard broken up material, such as hard burnt clinkers, coarse, sharp gravel or granite chips, is suitable for the filling. Hard coal is excellent, but experience with coke and cokebreeze, also with soft limestone, has shown that these are not so good, being porous and subject to disintegration. The material should be free from dust and dirt, and must be washed before use, if necessary. The size best adapted varies from 1 to 2 inches.

The latest development of bacteriological purification methods is the percolating or trickling filter, to which sewage is applied either intermittently, with periods of rest, or continuously. It

waste going in the tank, for there is another main for that purpose, and oblige, yours respectfully, A. Binnette, Lachine."

On looking over the sketch sent by your correspondent, I would make the following suggestions, viz:—that either the second divisional wall be raised, or the vertical pipe of syphon reduced in height, so as to secure a greater pressure of water to force the syphon, as at present there is only a difference of 5 inches between them.

The syphon pipe should be the full 3 inches diameter all through, and not be reduced to 2½ inches at top as shown by your correspondent. This pipe should also be carried down below the bottom of tank and trapped: see accompanying sketch.

I presume there is sufficient length and capacity of the 6-inch tile drain to contain and dispose of the whole of the contents of the discharging chamber. This is absolutely necessary to ensure the proper working of the system.—C. W. C.



# How to Figure Expenses and Profits

Recently a business efficiency expert caused to be inserted in several national mediums, a little problem he had found that always agitated the minds of retail dealers wherever it was propounded. The problem was stated as follows:

Wholesale price of an article is \$1.00  
Cost of doing business...22 per cent.  
Retailer's profit .....10 per cent.  
What is the retail selling price?  
**Remember, you are basing your percentages on selling price.**

This problem has led to more agitation among retailers, their trade papers, etc., than anything excepting the parcels post or the question of substitution, that has appeared in the trade press for several months.

Some correspondents in their desire to contribute to the humorous rather than to the serious columns of the publications, have expended a prodigious amount of clumsy wit in making fun of the man who would compute profits with percentages figured on his selling price. They seem to think the "good old arithmetic" is the sole arbiter of the question.

They entirely eliminate the equation of human nature.

I believe the writer has as much respect for the "good old arithmetic" as he has for the good old anything else, but he believes also that the world moves; that you can't stand pat on the methods of statement indulged in by the old arithmetic, any more than you can stand pat on anything else in the world.

Scientifically, two and two always make four. Practically, two horses and two cows are neither four horses or four cows, but four animals.

So you must always be careful in the statement of your facts, because one statement does not always equal another.

From an article printed nearly a year ago, I get an illustration of the principle involved in the statement of the foregoing problem of figuring profits on the price.

"You will find in every arithmetic such examples which are scientifically true, but which do not allow for the false thinking of a great many very practical men. A man buys a horse for \$50.00 and sells him for \$75.00.

What percentage of profit does he make? Answer, 50 per cent.

"The arithmetic figures the percentage of profit on the \$50.00, and not on the sale.

"The consequence is that our good teachers have led us to think of the percentage of profit from a standpoint that makes many men think they are making much larger profits on the business they are handling than they really are. This makes them prodigal of expense and very often leads to a failure, which with a more thorough knowledge of expense from a practical, everyday standpoint could have been avoided.

"Suppose a man has in contemplation a horse for sale on the basis of the above transaction. A horse broker approaches him and offers to conduct negotiations. He asks a commission of 33 1-3 per cent. Now, the owner of the horse, believing he can get \$75.00 for him, and having a profit of 50 per cent. in sight, agrees, and the broker, having completed the transaction, renders a bill as follows:

Sold one horse at.....\$75.00  
Commission 33 1-3 per cent... 25.00  
Due Seller .....\$50.00

"In other words, the seller's books show a profit of 50 per cent., entirely eaten up by a commission of 33 1-3 per cent. This problem is thoroughly descriptive of the difficulties of a great many of our smaller merchants."

Let us, for the sake of argument, and for the purpose of clarifying the situation that has been somewhat fogged by men who think from entirely opposite poles, beclouding the issue with the dust of ridicule instead of trying to clarify it by sound reasoning, suppose a man starts in a small grocery business, and in order to keep the problem in harmony with the one stated in the first paragraphs of this article, I shall assume a large expenditure for expenses, etc.

The amount of percentage, of course, has absolutely nothing to do with the principles involved in the computation.

Suppose our dealer buys his stock of goods, and, as is usual in such cases, he prices them at what the wholesaler's salesman tells him he ought to get for them.

At the end of the month he finds that he has done a business of a thousand dollars.

He has kept a close track of all the sales, and finds the goods he has sold, at invoice cost, cost him \$680.00.

He finds that his total selling expenses, etc., are \$220.00, and thus he has \$100.00 as a profit.

He does a little figuring.

He assumes that his cost of doing business is 22 per cent. of the total amount of business that he has done, that being the easiest way to figure it. He has made a profit of 10 per cent. of the total amount of business. This is quite the natural way for the average man to figure it. Let us suppose, therefore, that he proceeds to replenish his stock with exactly the same kind of merchandise that he had before, and he thus buys another \$680.00 worth of goods. (We assume this simply for the sake of illustration.) He gets the goods in and he says—"I'll mark these to make 32 per cent. over cost, because I want to make 10 per cent. profit, and 22 per cent. will cover the cost of doing business, etc."

What does he get? He finds at the end of the month that he has sold the same amount of merchandise, but he has received only \$897.60 for it. In other words, he hasn't made his \$100.00 profit, but has actually paid out \$2.40 more than he received.

Had the retailer's knowledge of percentage been more thorough, he would have realized that while the \$320 was 32 per cent. of his sales of \$1,000, it would be necessary to add 47 per cent. to the cost of his merchandise to get selling prices to total the desired \$1,000.

Briefly, could it be argued with success that because \$320 was 32 per cent. of \$1,000, it therefore was 32 per cent. of \$680? But it is just there that our retailer fell down!

He has been guilty of two fallacies in his methods. In the first place, he has based the percentage of profit and cost of doing business on his volume of business, but applied these percentages to his cost price, when it came to making new prices; and in the second place, he is not trying to make any money on the amount of capital paid out for rent, clerk hire, advertising, etc. It is just as real capital that pays the clerk to hand out the merchandise, as is the capital which it takes to pay the wholesaler for the merchandise, and a man should make money on both, because both are part of the service which his



capital procures for the purchasing public.

How should he have protected himself in the matter?

Let us figure it out a moment.

Our dealer has found that his cost of doing business is 22 per cent. He wants a profit of 10 per cent.

We assume that 100 per cent. is what he gets for the article. Therefore, we deduct the 32 per cent. from the 100 per cent. to find out what per cent. of the total price, the cost price is, because the cost price will be that portion of the 100 per cent. which is left after deducting the percentage required to pay the cost of doing business and the profit. We find, therefore, 68 per cent. of any selling price, where the cost of doing business is 22 per cent., and the profit desired 10 per cent., represents what any article costs. Suppose the article cost \$1.00. We divide 68 into \$1.00, after adding two ciphers, and get \$1.47 plus as a result. Let's prove it. If a man sells the article for \$1.47, and is allowing 22 per cent. for cost of doing business, he gets 32 cents plus. for expenses. If he has figured on 10 per cent. of his business as profit, he finds that he gets 147-10 cents or 15 cents profit. Deduct your 32 cents cost of doing business from your \$1.47, and you have \$1.15. Deduct 15 cents profit, and you have the \$1.00 left.

So we have proven that it works.

And we propose to prove that this is the better way to handle the figuring of profit for a good many reasons.

Suppose a man wants to do it the "good old arithmetic way."

What does he have to do?

He has found out that 22 per cent. of the total amount of business that he has done represents the cost of doing business.

He figures that if he makes 10 per cent. on the amount of business he is doing, that he would be making a fair return on the amount of his capital invested.

He understands that he is getting his percentage on the amount of his business, but he wants to figure his profits on his cost price.

All right.

We find by referring to the "percentages of profit tables," which I will be very glad to send to anybody interested, that, in order to make 32 per cent. of the selling price to cover your cost of doing business, and to make a profit, you will have to add 47 per cent. to your cost price. (You see our \$1.47 comes in on an article that costs \$1.00.) In short, it doesn't make any difference whether you figure on cost or selling price as a basis, provided you understand that 10 per cent. profit of your gross business will not produce the profit when

you use it as a profit to add to any given cost price.

A very simple illustration will suffice. Suppose your selling price on an article is \$1.00. You know it costs you altogether 90 cents to get it into the hands of the customer. You say, that's 10 per cent. profit. But suppose another bill of goods comes in, and you say to the clerk, "Mark it up 10 per cent." You mark it up 10 per cent., and it gives you 99 cents, doesn't it? It doesn't give you \$1.00, does it?

But if you kept in front of you the fact that 10 per cent. of your selling price meant 11.11 per cent. of your cost price, then when that bill of goods came in, you would mark it up 11.11 per cent. of the cost price, and the price would be 99 99-100 cents, which you would make \$1.00.

After all, therefore, it comes down to the question of the policy of figuring profits on selling or cost price. We know, what I believe all our readers will admit, that we can get very sadly tangled up sometimes. I know from a pretty wide investigation, that many a retailer is to-day figuring in the dark with a result that is unfortunate, because he does not keep the percentages of profit from his cost prices.

We know that it makes a very great deal of difference how you look at a thing. It is important that the average man should consider every part of his business carefully.

This is the day of scientific management.

This is the day when we are trying to consider things from a practical standpoint. The advantages of figuring your percentage of profit on the selling price and not on the cost, are obvious, if we will consider them open-mindedly and dispassionately, and leave the good old arithmetic—for it is a "good old one"—and while being profoundly reverent of the ancient problems, yet know how they work in our everyday lives.

Thus, because a problem is stated in one way, doesn't mean that it can't be stated in another and the last be a better way of stating it. The following reasons for handling profits on a basis of selling price, are paraphrased from Thomas A. Fernley's book "The Right Way to Figure Profits," which I shall be very glad to send to anyone who will read it:

1—The remuneration of salesmen, for instance, is figured on a percentage of the selling price, and is not figured on the cost price. Therefore, the selling price plan works in harmony with that.

2—The percentage of expense of doing business is based on the selling price.

If you talk and think of your percentage of profit on cost, and your percentage of expense on selling price, nine cases out of ten, you will lose money before you get yourself untangled.

3—Because the mercantile and other taxes are invariably based on the percentage of gross sales. Therefore, it is important if you are figuring in your mercantile and other taxes in your expenses, to figure them in the same way in which you are figuring your anticipated profits and making your selling prices.

4—Because the sales totals are always given in books of records. Cost totals are seldom if ever shown.

5—Because a profit must be provided for two items of capital. On the capital invested in merchandise and on the capital necessary for operating expenses and other expenses not properly chargeable to merchandise account. This is only possible by figuring a profit on the selling price.



## MOVE TO LARGER QUARTERS.

The executive offices and New York show rooms of the H. W. Johns-Manville Co., manufacturers of asbestos, magnesia and electrical supplies, were moved on April 20 to the new twelve-storey "H. W. Johns-Manville Building," Madison avenue and 41st street, New York City, from their old quarters at 100 William street, where they have been located for the past 15 years.

This move marks the 54th anniversary of the company. Under the name of H. W. Johns Manufacturing Co., the business was conducted at 87 Maiden Lane, previous to May 1, 1897, when it was moved to 100 William street. In 1901 the firm name was changed to H. W. Johns-Manville Co., a consolidation being effected between the Manville Covering Co., of Milwaukee, Wis., and H. W. Johns Mfg. Co. This last combination brought together two of the largest manufacturers of pipe and boiler coverings, packings, roofings, etc., in the world.

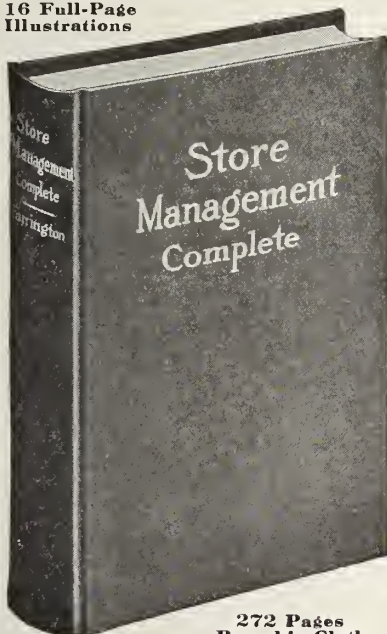
They now have factories located in Brooklyn, N.Y., Milwaukee, Wis., West Milwaukee, Wis., Hartford, Conn., Nashua, N.H., Lockport, N.Y., and Newark, N.J., with an asphalt refinery at South Amboy, N.J.; and extensive asbestos mines at Danville, in the Province of Quebec, Canada, which are the largest in existence. They also have a branch house in every city of any size in the United States and Canada, as well as representatives in about all foreign countries.





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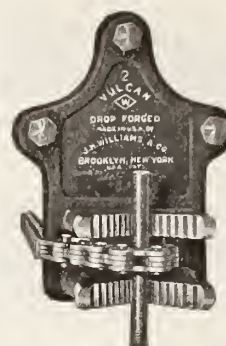
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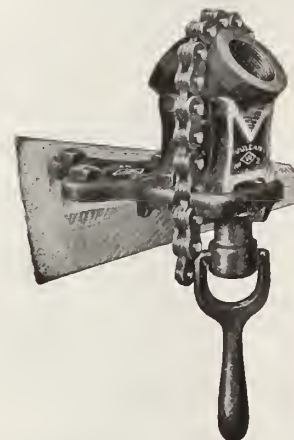
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Messrs. Waldon Co.,  
Winnipeg,  
Man.

Gentlemen:

I beg to report that the #5 Spencer Self Feeding Hot Water Boiler that I installed in my residence here last year, has been carrying some 1049 square feet of radiation exclusive of mains.

I started the fire in the month of September, 1911 and up to this date the boiler has consumed some 13 tons of our native coal, that is a semi anthracite coal, the quality used being Pea size which cost some \$4.00 per ton. I may say that the magazine when partially filled will operate the boiler for 12 hours and during the coldest weather a slight shake of the grates every four or six hours during the day kept the fire in excellent condition. The boiler kept the temperature of the house at a desirable degree during the night without any attention and I am convinced that a Spencer Boiler with a reserved capacity, say 25%, would greatly increase the service of the boiler. I also wish to state that the Spencer Boiler consumed four or five tons of coal less than the #6 Cast Iron Boiler that I removed and it is also fair to the Spencer Boiler to state that the addition to my house last year increased the amount of radiation as compared to the quantity that the Cast Iron Boiler carried.

I am very well pleased with the results received with the Spencer Boiler and also wish to advise that other parties for whom we have installed the boilers are very enthusiastic over their heating plant, in regard to efficiency and economy.

Yours very truly,

*E. J. Young*

### REFERENCES

CITY HALL  
Plumbing and Steam Heating  
CITY POST OFFICE  
Hot Water Heating  
IMPERIAL HOTEL  
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ALBERTA HOTEL, OLDS  
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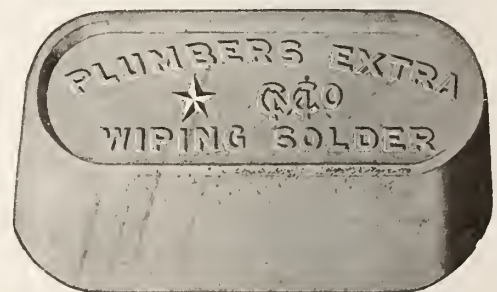
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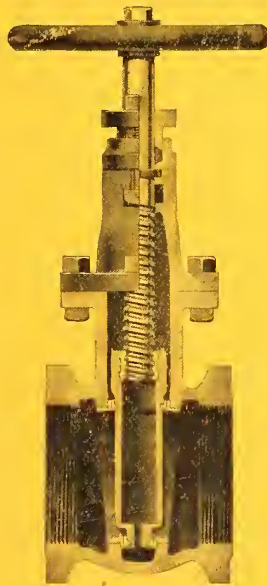


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Vol. VI

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No. 11



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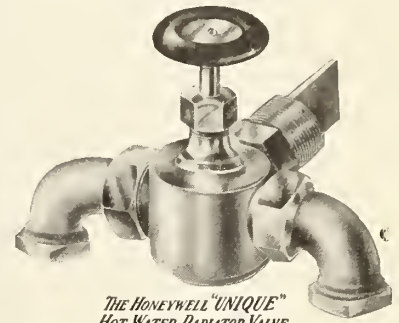
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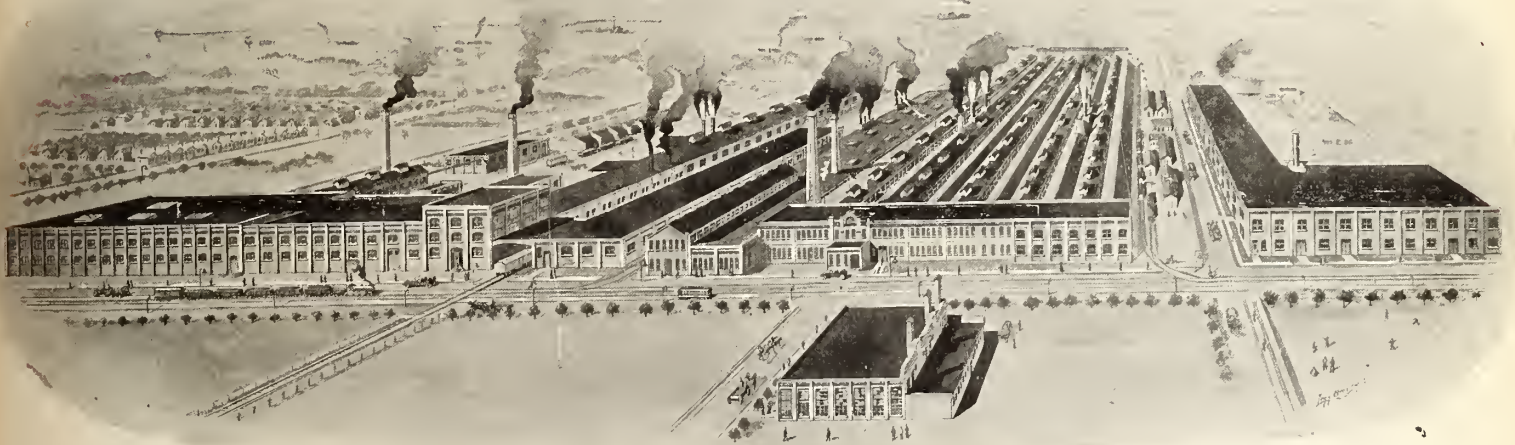
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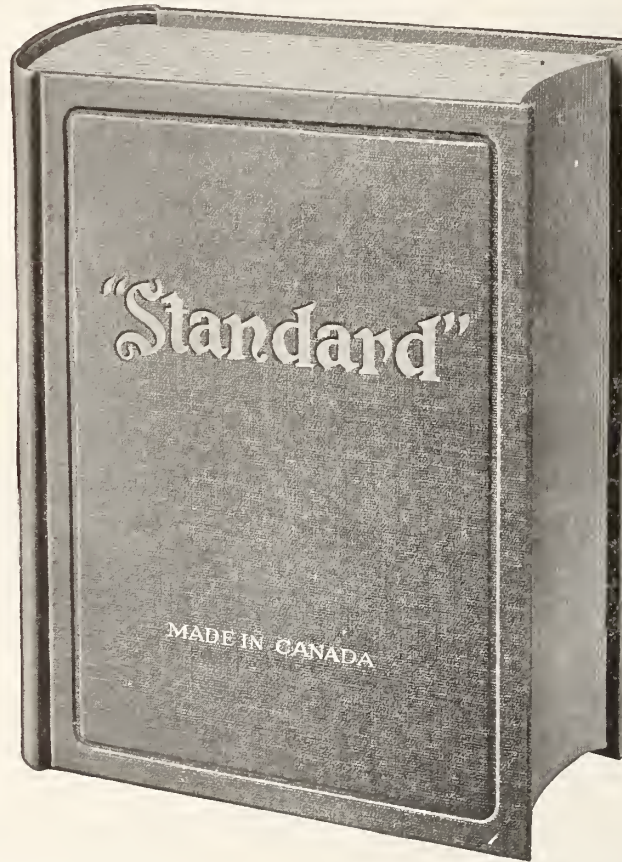


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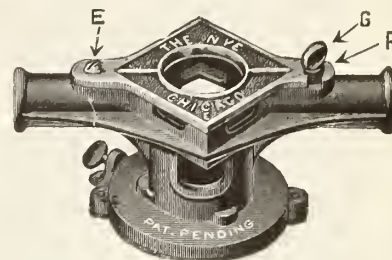
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## **Better Service, another Boiler and Prompter Shipments—Our Program for 1912**

*THIS space is taken to keep our friends in the Trade in touch with what we are doing. It will contain some sensational announcements during the year. Watch for it.*

While 1911 was a record breaking year for Boiler and Radiator manufacturers—in fact, too prosperous in some respects for our own and our customers' good—we are planning to DOUBLE our output this year.

Our St. Catharines plant which is being rushed to completion will be used for the manufacture of the "KING" Boiler. It will also include a radiator foundry auxiliary to our Toronto Plant. This will enable us to turn out several thousand more feet of radiation.

We will also place on the market this year a complete line of Steam Boilers. A further description of these will be published shortly. Until then we can promise the Trade that STEEL and RADIATION'S steam boiler will be without a peer on this continent.

In the meantime your orders for radiation, boilers and supplies will be appreciated and given prompt and careful attention. Mark your urgent orders "RUSH."

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# Is Canada on Verge of a Shortage?

**Will Plumbing and Heating Supplies be Hard to Obtain This Fall?—Present Indications Point That Way—Soil Pipe is Now Very Hard to Obtain—Work Stopped in Edmonton as Result—The Explanation Seems to Lie in the West.**

**I**S Canada on the verge of a shortage in plumbing and heating supplies?

Many manufacturers declare most unreservedly that such is the case. They predict that before the summer is out a serious scarcity will be felt in practically all lines. "The country has developed more rapidly than we have," said one man. "When you add to that the fact that we are facing transportation difficulties, you have the reasons for the shortage which is coming."

## The First Signs.

The first evidence is the shortage now being felt in soil pipe. The demand for soil pipe is at its heaviest, and the manufacturers are not in a position to fill the orders which are pouring in.

The pinch is being felt particularly in the West. Plumbing firms in the Western cities, who have large contracts on their hands, are wiring in to the manufacturers urgently requesting the shipment of carloads of soil pipe. In many cases, they state that they have come to the end of their resources and must have more soil pipe before they can go on with their work.

One telegram received in Toronto a week ago, stated that building operations in Edmonton were being tied up through lack of pipe.

The scarcity is not confined to the West, of course. It is most keenly felt there on account of delays in transportation, but in the east also the trade is experiencing difficulty in securing supplies. Roughing-in work is being held up in all sections more or less as a result of this.

## Unprecedented Activity.

The fact of the matter is that the country is seeing a boom in building operations of such unprecedented proportions that the difficulty now being felt in soil pipe will be duplicated in all other lines later.

In some of the Eastern cities, perhaps, the building operations are not in excess of last year, but these merely serve as exceptions to prove the general rule. All over the country, building activity is greater than ever before. In some parts of the West, the increase is so phenomenally large that persons of conservative mind can scarce grasp the significance of it.

The natural result is a much greater demand for everything pertaining to

building equipment, plumbing and heating goods included. That the manufacturers have not in the past appreciated to the fullest extent the possibilities of expansion is the opinion now pretty generally held. Hence the danger of shortage facing the plumbing and heating trades.

## Other Shortages.

The pinch is not being felt in soil pipe alone at the present time. Lead pipe is also very scarce. Traps and bends have been advanced in price from 45 to 40 per cent., this step having been made necessary more on account of the scarcity than anything else. It is also reported that iron pipe is none too plentiful.

## Will Extend to All Lines.

The scarcity will extend to other lines in time; to all lines, from present indications.

It is learned that there is enough enamelware on hand to meet the present demand. The real demand, of course, has not yet manifested itself. That a scarcity will arise in a few months' time is not a wild guess. The advance in building work which has created the present shortage in soil pipe will lead to a correspondingly heavy call for enamelware in the late summer and fall. Will the manufacturer be able to meet the demand with readiness? The impression is pretty deep-seated that they will find great difficulty in meeting the demand. While they do not affirm this now, the manufacturers admit that the present demand and the size of the orders booked point pretty surely to something resembling a scramble later in the season.

The same refers to boilers, radiation and heating supplies generally. The boiler firms were pushed just about to the limit last year. This year the demand will be considerably bigger, especially in the West. Will they meet it as well as they did last fall? It is a moot question.

## The Effect of a Shortage.

From the standpoint of the trade, the prospect of a shortage, if only of a partial and temporary nature, is not pleasant. It spells delay in work, contracts tied up, time limits broken and various other features not generally regarded in a favorable light. Still, the situation must be faced with equanim-

ity, and the best possible made out of it. The manufacturers will do their best to cope with conditions and to supply the demands.

How the West will be affected is a serious point. Some of the cities of the West are developing and growing so rapidly this year that building operations are bound to suffer if a shortage develops. Work has been held up in Edmonton already, from reports. It will readily be seen that the situation will become worse if shortages develop in all lines.

## What is Remedy?

Manufacturers agree that the West is the explanation for the enormous advance in consumption. Does the remedy for the threatened stringency lie there?

Practically all manufactured goods are made in the East now and shipped West. Although mostly all firms have Western branches and warehouses, comparatively few have Western factories. Would the shifting of some of the burden of manufacture to the West relieve all danger for the future?

Some firms are doing this. It is recognized, however, that there are difficulties. Labor is harder to obtain in the West. There can be no doubt that, from the standpoint of the West, it would be a good thing if more factories were located there.

## Trade is Busy.

One satisfactory feature is reflected through it all. With so much building going on and so heavy a demand all around, the trade is going to have one of the busiest years in history, if not the very busiest. Reports already are to the effect that the sanitary and heating engineer has enough work to keep him busy for the rest of the year. The inconveniences of a possible shortage in supply fade into insignificance in the contemplation of the prospect of so active a year's work.

## Mr. Laferme Ill.

J. J. Laferme, manager for the Standard Ideal Company in Quebec Province, has been seized with an attack of appendicitis. The operation, which it was found necessary to perform, has been successful.



## Reduced Rates Secured to Calgary

**A Mix Up Exists at the Present Time as to the Date Upon Which These Cheap Fares Start, But That Will be Straightened Out Ere Long.**

Montreal, May 29.—Here is good news for the many Sanitary and Heating Engineers, who, while not appointed to represent their local associations, are yet desirous of attending the convention to be held in Calgary this July. Cheap rates have been secured upon all the railways. The journey to Calgary is not a short one, but by reason of the reduced fares the cost of making the trip will not be prohibitive.

As yet, final arrangements have not been made with the Railway Companies. They are willing to give the desired reduction, but want this to come in force only three days before the Convention opens. This, of course, would mean that those going from Montreal, or points further east, could not arrive at Calgary until the proceedings were well advanced—a somewhat strange state of affairs seeing that the President and the Secretary both come from Montreal.

But then, as Mr. Watson says, this is only a little trouble. It will be straightened out with the railways shortly, for they are desirous of having people make the trip and not of keeping them away.

If the three-day limit for buying tickets should be maintained, however, the trouble could be overcome by extending the length of the convention, and having the real start two or three days after the announced opening.

But the main point is that the cheap rates have been secured. Those who want to attend the Calgary gathering—and what Sanitary and Heating Engineer does not—will be able to make the trip at a comparatively low cost.

## MARKET REPORT

### MONTREAL.

Montreal, May 30.—Already the word scarcity is being uttered by the manufacturers. It's sound causes both satisfaction and regret—satisfaction because there would not be a scarcity were there not progress and a good demand; regret because more goods would mean less disappointment to some, and more profit to many.

It is in pipe that the scarcity has already shown itself—especially soil pipe, though there is none too much lead pipe on hand. Both of these articles have advanced in price—soil pipe ten per cent., and lead pipe from 25 to 20 per cent. discount.

The causes of these higher figures are not hard to determine. It is largely the scarcity of the raw material which has brought about the advance. In the case of soil pipe, however, there is a correspondent—the difficulty of securing coke which is absolutely necessary for the manufacture.

### What of the Future?

When a scarcity is already making itself felt for soil pipe the consideration of what will happen in the fall becomes a question of vital interest. This time last year the handlers had good supplies of soil pipe—yet their stock was depleted in the fall, and there was something approaching a soil pipe famine. What then will be the condition by the time September, 1912, comes around?

For all plumbing supplies there is an active demand being felt. Building is going rapidly ahead, and there is no real

reason to fear that any falling off will be noted. Everything, indeed, points to much greater building operations this year than last.

Enamelware.—Many houses are now being completed. The same is true of larger buildings—office structures and public edifices. For all of these, bath rooms are needed. Even the terrible dollar tax upon every bath tub in a place renting for more than a certain figure, has not had any deterrent effect upon the demand. Sinks, wash tubs and such lines are also wanted. Indeed, for all classes of enamelware the call is large. It would seem that this will increase greatly as the season advances.

Soil Pipe.—As has been said here is the place where a real shortage is already making itself felt—a shortage which in one way is hard to account for, seeing that the manufacturers have worked their plants hard during the year. It would appear that somewhat mild periods during the winter, and a good spring, have enabled work to be so far advanced, that great quantities of pipe are being needed.

MONTREAL SANITARY ENGINEERS AWAY FROM HOME.



From left to right this picture shows John A. Gordon, Arthur W. Gardner, James H. Gardner and W. J. Gordon. These four were among the hundred Montreal investors who were taken on a visit of inspection to the Spanish River Pulp and Paper Company Mills by the Dominion Bond Company. The snap

shown was taken at Espanola where the mills are situated.

The day after the taking of this picture, May 15, the brothers had a snow ball fight at Sudbury, and it is still debated point as to who won—Depends entirely upon who tells the story.



There is also the belief that some dealers, remembering the shortage of last year, are already laying in a large supply. Wise dealers they are.

The advance in price does not seem to be causing any anxiety. It was to be expected. Iron, so largely used in the manufacture of soil pipe, is higher in price than for years. This means that the manufacturers are paying a great deal more for their raw material. Their work of production is also more costly—not only because the price of labor is steadily advancing, but because coke is high, and difficult to obtain. This scar-

city of coke, indeed, has perhaps had most to do with the present scarcity of soil pipe.

#### Prospects Look Bright.

Furnaces and Radiators.—While this is the off season orders are yet being received, and everything points to a rush business later on.

Iron Pipe.—Even the American competition cannot keep down the price of this commodity, for with the high price of pig iron an advance must be made. No change in the price level has been struck as yet.

## Big Demand for Water Heaters

**Dealers Report Ready Sales of These Comfort-Bringing Contrivances—But Intelligent Salesmanship is Needed to Secure the Best Results—Many are Willing to Pay a Good Price for a Good Article—A Striking Phrase Used.**

“A Hot Bath in Seven Minutes for Two Cents.”

Such is the sign which a Montreal plumber, who has been pushing water heaters, put upon one of the models which he was displaying in his window. An attractive phrase it was, and no wonder business was drawn.

This is a season when heaters may well be sold. They are needed now. In practically every house the furnace has been allowed to go out; and while the weather last week was intensely hot, there are yet cold days to be encountered. Moreover, even on the hottest day, an icy-cold bath is not a thing to be experienced with joy. There the pleasures of anticipation far exceed those of realization.

#### Low Cost, Little Attention.

The argument that water heaters would prove a real convenience in the home, is one from which people cannot well get away. But people need to have a thing brought clearly to their attention; and it is for this reason that the Montreal plumber has thought of a striking phrase, which brings it home to all who pass that they can get a machine which will give them hot water at a very low cost—a machine which also will demand very little attention.

This method of attracting the attention of the passers by has proved exceedingly effective. For this reason: The people are struck by the statement of cost, and by the statement that the bath can be prepared in seven minutes. But they want to know not only the cost of upkeep, but also the initial cost; and to find this out they enter the store. This gives the dealer his chance, and from the number of sales the one in question reports, it is quite evident that he has made the most of every opportunity accorded him.

#### Will Pay the Price.

“I have found this,” remarked the dealer in speaking of his success, “that there are a large number of people in this district who are willing to pay a good price for a heater. There is one contrivance here which I thought would be too expensive. I got one model in, for I felt I could surely sell that, but I hardly expected to market many more. I really installed the one more to make my stock attractive than for any other purpose.

“That belief, though, only showed how far I was behind the times. I soon discovered that there were a number more interested in that expensive machine than in any of the others. When they heard it worked automatically—that the turning on of the tap started the flame which in a moment would supply them with hot water—they were pleased. When I showed how the heater worked; how safe it was; how little would be the cost of upkeep, they were still more interested; and the explanation of the thoroughness with which this heater supplied the house—how it gives hot water for any tap—clinched a number of sales. That heater sells from \$100 to \$150, and the cost of installing will add to this, yet I have found people ready to pay the amount.”

#### Want to Know Whole Cost.

The question of installation has been one which this dealer has been forced to consider seriously—much as has a man who has just taken up the handling of gas stoves. “People want to know how much the heater will cost them when it has been put in operating order. I have not been able to put an installed price upon the machines, for I have found the cost of putting them in differs so much. But I have found it best

to make an inspection of every house in which there is talk of putting a heater. Then I can tell the prospective purchaser exactly what the installation will cost, and by adding this to the cost of the heater, the full charge is ascertained. People want to know the full charge nowadays, before they make a purchase.”

#### Sold Samples Even.

But there are cheaper heaters which have proved exceedingly popular, according to the statement of this successful dealer. “Take that contrivance,” he said, and pointed to a boiler. “But the contrivance isn’t there,” he added. “It ought to be but I had to sell even my sample. The demand has been exceedingly heavy.

“The machine I wanted to show,” he continued, “was one which fits onto the boiler. The gas is turned on there, and in ten or fifteen minutes hot water can be secured from any tap. This machine requires a little more attention than the larger model. Perhaps it is not as good in a number of ways, but it certainly is a great little heater, and people are taking to it more and more. If it is operated with care the gas consumed is not at all great. It means a trip to the cellar if the boiler is located there, that is really the only thing against it.

#### Had to Borrow.

“Yes, I have sold a number of these models,” continued the dealer in reply to a query. “You see they are cheaper than the others—they can be sold installed for \$25—and while price does not seem to count with a number of customers, it is naturally a consideration with many. Why, the call for these heaters has been so heavy that I have had to borrow. I had a shipment on the way recently, but there was some delay and the customers who wanted a couple of the heaters did not want to wait. I had to borrow from a fellow dealer, and as you will see that shipment, which arrived almost as soon as I delivered the borrowed heaters to the impatient buyers, is gone too. So is my sample.

“By the way,” remarked the dealer, “the man who allowed me to have two of his heaters pretty nearly lost a sale because of his generosity. He had a run on heaters—sold what he had on hand, and was hard pressed for another when my shipment luckily came, and I returned what I had borrowed.”

There are heaters of still other patterns, of course. One, for instance which stands beside the bath in the bath room is exceedingly popular. Perhaps it produces the hot water faster than does any other machine, but it does not supply so many taps.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, JUNE 1, 1912

WILL A shortage develop in plumbing and heating goods this fall? Present indications seem to point that way. There is a marked scarcity of soil pipe at the present time and the same conditions—the phenomenal advance in building activity in all parts of the

### WILL SHORTAGE DEVELOP?

country—which have caused this shortage will act on the demand for enamelware, boilers, radiation, etc.,

later in the season. It is not rash to assume that, when the full fall demand is felt, the manufacturers will hardly be in a position to meet all requirements.

The satisfactory feature of the situation is the surety thus held forth of an extremely active year in the trade. There will be plenty of work for all members of the sanitary and heating crafts.

THE OPENING of the national convention at Calgary is now little over a month off. The main question is, are you going to be on hand? It is a certainty that there will be a large western delegation on hand and hopes are held out for a good attendance from

### THE NATIONAL CONVENTION.

the east. If such is the case, the convention will have results of a far-reaching nature. Important matters are to be considered and, with a representative attendance, it will be possible to inaugurate steps which will have a wide influence on the future of the trade.

NOW THAT the dog days are approaching, the question of early closing becomes one of great importance. Whether the shops should be closed earlier every evening is a question which has been widely discussed, and which is certain to receive more attention before this summer is out. It need not be considered

### THE SATURDAY AFTERNOON HOLIDAY.

here; but of Saturday afternoons a word might well be said. In Montreal, the Sanitary Engineers have now come to the parting of the ways upon this question. Some are observing the Saturday half-holiday, but many keep open until six o'clock on the last day of the week as on all others.

Closing upon Saturday afternoons has been debated in Montreal for some considerable time. There are many who favor closing at noon, or at one o'clock, the year through. Others hold that in those seasons when repair

work is being done, the Saturday afternoon holiday is not only responsible for a financial loss to the Sanitary Engineer, but also for much inconvenience to householders. Many of these leave their work until that time, and they are annoyed when they find the shop where they usually deal, closed. They are likely to try a place of business which does not close—and their trade thus lost may remain lost.

The summer season, however, is different. Little repair work is being executed. If people have planned to have some plumbing done on Saturday afternoon, but find the store closed, they will put off the work, and think little about it. Saturday afternoon in the summer months is becoming widely regarded as a holiday. The Sanitary Engineer owes it to himself and to his men to observe this.

### A WORD ABOUT SIGNATURES.

Improvements in business methods during the past few years have been many. The telephone brought a silent revolution. The telegraph, and later the wireless, rendered still further aid, while the typewriter has come to do still more toward time saving.

Time saving. That is a cry of the age. It is to save time that letters are typewritten—to save the time of the sender and of the receiver. The minutes conserved by the legible writing of the machines would aggregate years.

But still there is a waste of time which hardly seems necessary. Etiquette decrees that the signature of a letter shall be in writing. Etiquette is responsible for much—and in this case is responsible for unnecessary worry, for moments wasted, and for violent words launched boldly on the office air.

How often, after the reading of a letter, is the whole office staff summoned to hazard opinions as to the characters represented by the hieroglyphics at the bottom of the missive.

Many famous men have a signature which looks like a seismograph's record of an earthquake. Many who are not great think they will achieve greatness by copying the idiosyncrasies of the great. They affect an unreadable signature. They need some such awakening as was given the young minister to whom an old Scotch body remarked: "It was na sa bad a sermon. You reminded me of the great Talmage when you blawed yer nase."

Indeed, it is often the weaknesses of the great that are copied, but it seems a shame that any should attempt to make their signatures more unreadable than they naturally are.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

"Just six weeks more."

Such is the phrase which Mr. John Gordon, known to his many intimates as Johnnie, is saying to himself as he leaps out of bed these mornings. It is not Christmas which Mr. Gordon is looking forward to—the date will show that. Two guesses, what is it? And straight way John Watson, James Walsh, E. L. Legrow, John Marshall, and others of the initiated, will hold up their hands signifying that they know the answer and will shout, "Six weeks to the Convention at Calgary!"

"Correct."

"Go up head, all."

Indeed, Mr. Gordon is counting, not only the weeks but the days until he may leave for Calgary. Nor is he counting alone. Mrs. Gordon is counting, and so is Miss Gordon, for all three are going. There are men who through necessity or desire attend these conventions alone. Mr. Gordon is not of these. Mrs. Gordon always goes along—indeed if he did not bring her, his fellow members would likely move a vote of censure upon Mr. Gordon.

## The Great Summer Amusement.

Going to the convention—it must be known—is Mr. Gordon's great summer amusement. In the winter there are other things to occupy the attention. First of all there is curling, Mr. Gordon being a member of the famous Caledonia Curling Club. There he meets all comers—including John Watson—and comes off victorious at least a fair share of times.

But even in Montreal curling cannot be stretched past the end of March, or commenced before the first of December. There is, therefore, a barren stretch of time—eight months in extent—during which there is absolutely nothing to do but work and enjoy oneself without curling.

But how is one to enjoy oneself without curling? That is a great question. Some solve it by fishing and baseball. Others by yachting. None of these appeal to Mr. Gordon. He buys his fish without taking a walk along the river first—finds this easier on his conscience. He likes baseball, but more the variety played by the Sanitary Engineers, than by the professional exponents of the great American game. Thus, it will be seen, the attention is again brought brought back to the convention at Calgary.

## Trips Each Summer.

Calgary is going to be Mr. Gordon's great amusement for this summer. Nor



John Gordon, of Montreal.

will the trip there be all. For some time now Mr. Gordon and his family have been taking extended journeys each summer. A year or two ago they visited the Old Country, and now Calgary and the Coast is the destination. Naturally, therefore, the weeks and days are being counted.

It is twenty-three years since Mr. Gordon started business in Montreal, having served an apprenticeship before this time. With his brother, W. J. Gordon, he opened a stand on Beaver Hall Hill. A fine spot it was. Then the possibility of running cars up the hill was laughed at. Hundreds walked ed up and down daily. The rush at the few Beaver Hall stores was tremendous.

A move had to be made from here eventually, but it was not before the brothers had gone a good way toward amassing those much sought yellow fellows which make the regular summer trips possible.

## An Early President.

Every one who knows anything about the Canadian Society of Sanitary and Heating Engineers knows that Mr. Gordon has done much to make the society as effective as it has proved. He was one of the early presidents, and one of the early secretaries. He represented the association at the great convention in Atlantic City, and is confidently counting upon attending every coming session which the Canadian society holds. Mr. Gordon likes the work which is done at these associations, and likes even better the men who do it.

In the Montreal local association Mr. Gordon has been one of the men with

ideas. He has ever urged the benefits which come from co-operation, and hopes that some day the members may adopt some such system as is employed at Atlantic City, where a householder who will not pay his plumbing bill can not get any other Atlantic City plumber to do work for him. The sanitary engineers stand together to protect one another, as Mr. Gordon holds they should do here.

Only six more weeks.

When this time rolls by the sanitary engineers from all parts of the country will be gathering at Calgary. And among them will be "Johnnie" Gordon. It would be hard to keep him away, and it would be hard on the convention if any thing did keep him away.

## Has Recovered.

Montreal.—It will be good news to all members of the Canadian Society of Sanitary and Heating Engineers to hear that James Walsh, the President of the Association, has completely recovered from the injury which he recently sustained when returning from saying farewell to a delegation from Toronto. President Walsh is able to attend to all the work which devolves upon a president before a convention.

## Have Sold Business.

Montreal.—Arthur W. and James H. Gardner have sold out their business to F. Sampson. They will finish the contracts which they now have under way, and will then devote more of their time to building. For years they have been doing a good deal along this line, having nine houses in course of construction at the present time.

## Several Montrealers Going.

Montreal, May 29.—At a recent meeting of the Montreal Master Plumbers' Association, John A. Gordon was elected representative to the Convention at Calgary. It is expected, however, that Mr. Gordon will have several other members of the Association to help him bring back a comprehensive report. James Walsh and John Watson, of course, go as officers of the Canadian Society, and it is likely that John Meadowcroft, the President of the Montreal Association, and James Ballantyne, the past president, will also make the trip.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## HOT WATER DOES NOT COME WELL.

Editor Plumber and Steamfitter,—I have a job where the hot water does not come any too plenty. The tank is in the attic, and I have shown you the coil

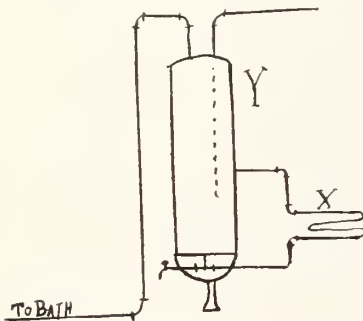


Fig. 1.

and how connected. Will you please inform me what is the matter?

C. T. R.

We should make the coil as shown in figure 2, instead of that shown in figure 1. We also should see that the cold water entered the boiler at the proper opening. The water will heat if the pipe

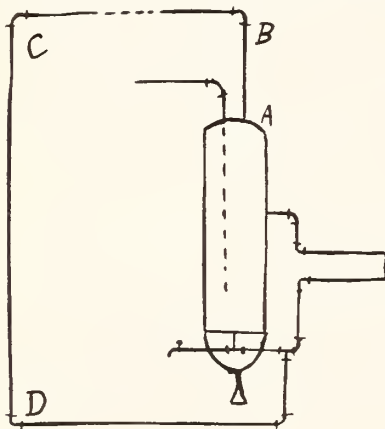


Fig. 2.

work is laid out similar to figure 2, the line A. B. rising to the ceiling and one outlet to the hot water fixtures taken from somewhere along the line of pipe B. C. Others can be taken from the pipe C. D.—D. C. H.

## OLD-FASHIONED BOWL WON'T STICK.

Editor Plumber and Steamfitter.—At a place I had to make some repairs there was an old-fashioned marble lavatory, the bowl fastening on with clamps. I could not make a tight sticking job of it. Will you tell me how to do the job properly?

E. C. Hess.

If you were an "old timer" we venture a guess that you'd have made the bowl stick all right. Many plumbers used to attempt to make such bowls stay in place by using three clamps only. Four clamps are necessary in order to make an absolutely secure and lasting job. We can suggest a better idea to you and that is, instead of attempting to patch up an old lavatory that is out of date for many years, make the attempt to sell the customer a new late improved and modern porcelain lavatory that is a pleasure both to look at and to install, and rest assured your customer will be more than satisfied after using the new lavatory for a few days.—D.C.H.

## WHY SINK STRAINERS ARE FASTENED.

Editor Plumber and Steamfitter.—The other day a certain party asked me why sink strainers were always fastened to places. I couldn't tell him and come to think of it, can you?

J. J. Gleason.

The average kitchen "help" would make short work clogging any drain that could be attached to the sink in a practical manner were the strainer so fixed that it could be removed. As it is, the plumber is sometimes kept on the trot to open up the drains of certain sinks in the neighborhood. As the general run of servants are mighty short on good horse sense and keen on doing work with the least possible amount of exertion, we venture to guess that the use of the strainer on kitchen sinks will not be dispensed with entirely for some years to come; or at least until some more practical way of disposing of kitchen

refuse has been found than exists at present.—D.C.H.

## RADIATORS FILL WITH WATER.

Editor Plumber and Steamfitter.—In a small two-radiator job I put up and

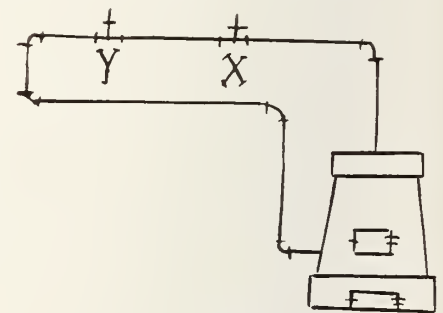


Fig. 3.

heated by a laundry stove, the radiators fill with water at times. How can I stop it? I send sketch.

T. H. Rauser.

In figure 3 the radiators are taken off at points X and Y. We believe that if

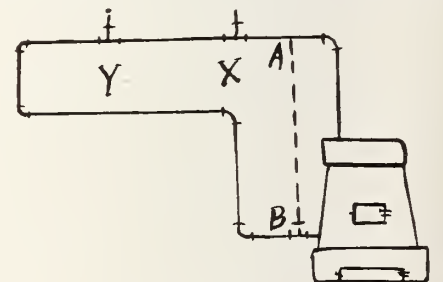


Fig. 4.

the subscriber takes off a drip such as is shown by pipe A. B., in figure 4, that he will experience no further trouble, and the radiators will then heat all O.K.—D. C. H.

## TO ABATE THE NUISANCE.

Editor Plumber and Steamfitter.—Some time ago I installed a job of plumbing in a hotel. An iron tank about 18 or 20 in. square supplies water automatically to several urinals. In the summer time the water is much colder than the air in the room and the tank "sweats" very badly. Just how to stop

it and make a good job of it I would like to have you tell me.

John Simmonds.

Turn off the stop and waste and allow the tank to become thoroughly dry. Then paste some paper in the tank. When dry some cloth can be pasted upon the paper and when this second coating is dry it can be painted any color desired and made a very workmanlike looking job. The pipes leading to and from the tank can be treated after the same fashion in case they have been in the habit of sweating and your customer will then not be bothered with sweating pipes or tanks any more.—D.C.H.

#### RANGE BOILER IN BASEMENT BELOW STOVE.

Editor Plumber and Steamfitter,—I tried to make a range work that was set in the cellar while the water front was in the stove on the kitchen floor above. It was connected as shown in a sketch

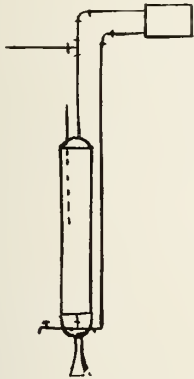


Fig. 5.

I send you. Will you inform me how I can get results?

D. V.

The writer's idea is shown in figure 5 which could not possibly work. If the pipe be carried sufficiently high, as shown in figure 6—the dotted lines in the loop representing several feet—a cir-

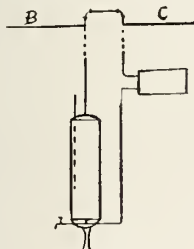


Fig. 6.

ulation will be established between the range boiler and the water front. The hot water pipes to the fixtures can be taken off, as pipes a or b are somewhere near the top of the loop. If not an air valve will have to be used at the top of the loop to relieve the air liable to be pocketed.

#### CLEANING THE SINK.

Editor Plumber and Steamfitter.—I don't like to be called to a residence every time the sink stops up. Can you tell me of something that will either prevent the traps getting clogged, or remedy the matter after the event has occurred?

R. H. Brown.

As an ounce of prevention is worth a pound of cure it would be well to have a large sink strainer standing in the sink. This will be an added precaution besides the ordinary strainer which is in every sink. Frequently letting several quarts of hot water run through the sink trap will assist in preventing its getting stopped up. Also avoid allowing grease (as much as possible) to run into the trap. Some will, anyway, but make it as little as possible. When the trap becomes nearly or fully filled up, concentrated lye or some other good solvent of grease can be effectively used. The "plumbers' friend" also comes in handy on occasion. We believe that we have mentioned remedies which will solve the prob-

lem. Should none of them prove effective it's a cinch that the job should have the services of a first-class plumber.—D. C. H.

#### EXTRAS.

Editor Plumber and Steamfitter,—Would you object to telling me about how much should be figured into an estimate as an allowance to cover "the extras?"

It is a matter that should be governed by common sense and the size of the job, the danger incurred and also the location of the work. We presume that you could get a line on the matter by going over, say twenty or more of your previous jobs and finding out just how much "extra" there was in each job and striking an average. The jobs would have to run pretty much the same in size. Another and a much fairer way would be to make it a certain percentage on each dollar. In this way you would be able to make the estimate with great accuracy regardless of the job's size.—

### Figuring Overhead Expenses on Tin Work

Cost of Doing Business Should Always be Considered on Making Up Prices for Metal Work—Labor Should be Treated as Merchandise—Always Figure on the Sell.

The owner of the tin shop should work out for himself some method by which he can charge the proper proportion of the "overhead expense" to each job done, so that by the end of the year these incidental expenses will have been automatically taken care of.

In the first place, if the tinner pays \$3.50 per hundred pounds for galvanized sheet iron, and, when he has finished the job, figures the material at \$3.50 on the weight of the finished job, he is actually throwing money away, for the simple reason that there is always a certain amount of waste that cannot be avoided. Proper allowance must be made for this and the easiest way is to add on say 15 or 20 per cent. to the weight so as to cover this item.

Then a man is entitled to a profit on the material, and if, as is generally the case, the dealer has a regular retail price at which he sells sheet iron, that is the figure that should be used and not the wholesale price.

#### Labor Should be Treated as Merchandise.

Labor should be treated exactly the same as merchandise when figuring the cost of a job. Whatever is the regular percentage for arriving at the price of goods should be used in charging for labor, for it is paid for in cash and there is waste and expense attached to it.

Here, then, would be the correct way of finding the selling price of a job. The figures used are not meant to be other than for the sake of a concrete example, and each dealer can use his own percentages as they may apply to his particular business:

75 lbs. sheet iron at..	\$4.40	\$3.30
8 hours labor at 30c		
per hour ... ..		\$2.40
Overhead, 20 per cent.		.60—3.00
		\$6.30
Profit, 10 per cent..		.70
Selling price .....		\$7.00

#### Always Figure on the Sell.

All percentages should be figured on the sell and not on the buy. Twenty per cent. of the sell equals 25 per cent. of the buy. Ten per cent. of the sell is 1-9 of the buy.

If this method of figuring is wrong, you will have to prove it. "I am from Missouri." Whether it is wrong or not, if you figure as per the above example you will make your tinshop support itself and pay a small profit besides. If you cannot get work on this basis, you will be better off if you discontinue the shop, unless you believe that having a tinshop, which costs you money, brings enough extra and profitable trade to more than compensate.—Hardware Trade.



# Methods of Sewage Disposal

By Charles W. Chandler, Toronto.

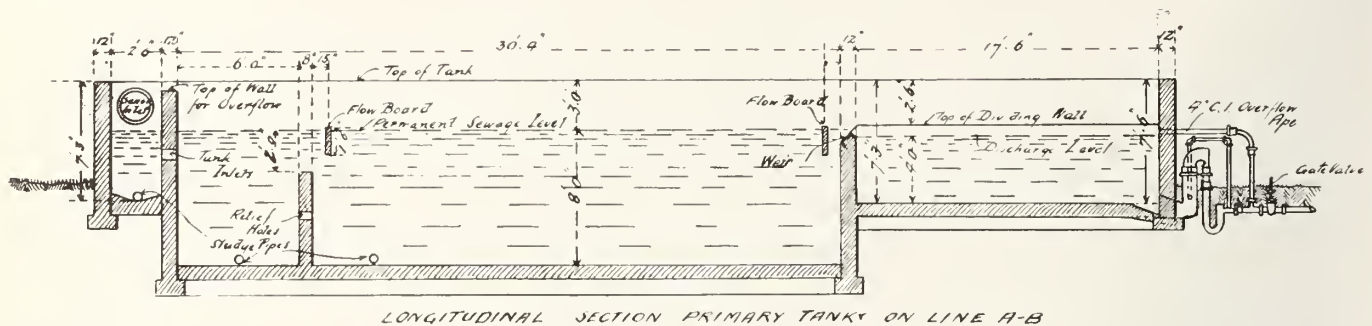
The accompanying plans and elevations show the various features and details of the primary and secondary tanks of one unit of a four-unit sewage disposal plant, recently installed by a suburban land company. The large primary tank contains a screen chamber, a sludge tank and a septic tank proper, together with a pair of dosing chambers and the operating weir. The two 5 in. x

creases to 50, an additional unit will be built, and the third and fourth units will be added when the number of houses reaches 140 and 230 respectively. The complete plant of four units is figured to take care of about 300 houses, and a total of about 20,000 ten feet of varying sizes of sewer pipe.

Some of the items of interest in the design of the plant are the rate of in-

The period at which the contact was set is 1 hour and 40 minutes.

The tanks are built of concrete composed of one part Portland cement, three parts sharp sand and six parts broken stone, shore gravel or broken brick. The parts were put into place in layers not more than 8 inches thick, well mixed and lamped and reinforced where necessary. The tanks must be watertight, and the

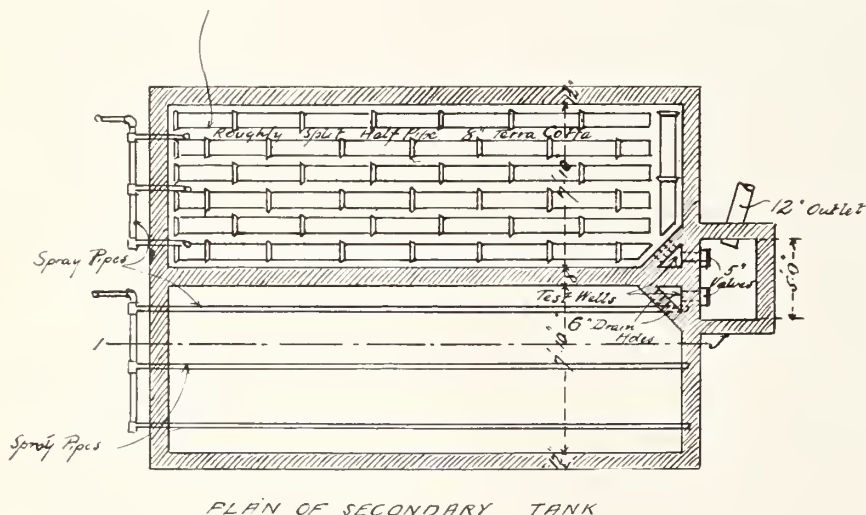


48 in. Rhoads-Williams automatic raw sewage siphons alternately discharge into 5-inch standard cast iron pipes leading to the spray pipes over the secondary tanks. The secondary tank consists of a pair of coke contact filters with distributing pipes and valves. A feature not shown on the plan is the sludge

filtration in the sewers, which was figured at .00905 cubic feet per second per acres at tributary drainage land. The period of treatment in the septic tank was shortened by five hours on account of the average duration of time the sewage will be in the main trunk sewer line, the septic period being accepted as 16

specifications called for the inside surfaces to be painted with hot pitch, then pargetted with cement mortar, one part Portland cement and three parts sharp sand.

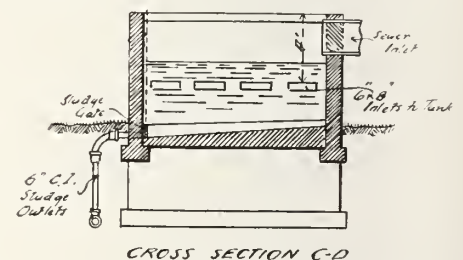
The primary tank receives the raw sewage and provides for the sewage to



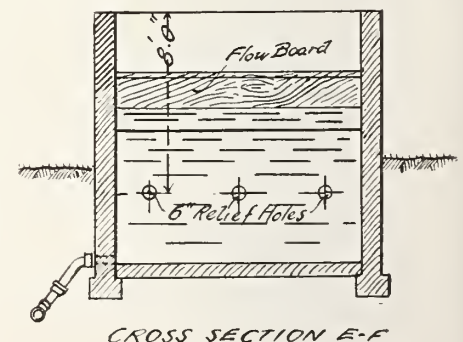
chamber, arranged so that, if it is considered desirable, the sludge can be collected and compressed or carted away, instead of discharging into the stream, as originally designed.

This plant, which is one unit of what will eventually be a four-unit plant, will have the infiltration from approximately 13,000 ten feet of sewer pipe, and about 15 ordinary eight-roomed houses to start with. When the number of houses in-

hours, less the above mentioned five hours and the storage time in the dosing tanks. The weir is set perfectly level by instrument, so that the two siphons may alternate, although this is really unnecessary, inasmuch as the liming siphons which can be placed in the small chamber at extreme end, to hold the effluent in contact, will be set independent of each other, and the discharge bells will be in a separate liming chamber.



settle while the liquid enters the main tank through a series of 6 x 18 in. openings, as shown in the elevation of the cross section on C.D. The sewage is

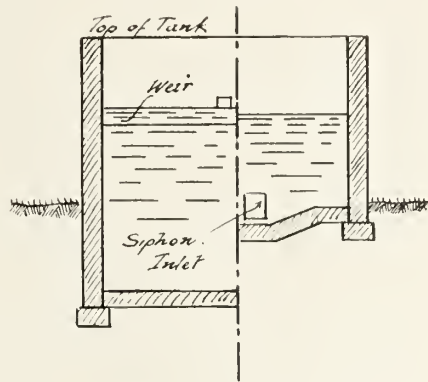


maintained at a permanent level, but there are flow boards located as shown to prevent a direct flow across the tank

at the top to carry away the crust. The sewage is maintained at a permanent level, but there are flow boards located as shown to prevent a direct flow across the tank at the top to carry away the crust. There is a wall 6 feet from the supply openings to collect further the sludge, while the bottom of the large tank slopes to another point. There are pipes connecting at these three low points with gates upon them, so that on their being opened the sludge can be drawn off. The liquid sewage overflows a weir at the end of this tank into a discharge tank, which empties periodically by a siphon as shown in the elevation. Holes 6 inches in diameter are provided in the wall below the first flow board.

The siphons alternately discharge into 5-inch standard east iron pipes, leading to the spray pipes over the secondary tanks. The distributing spray pipes are made of 4 ft. 6 in. galvanized wrought iron pipes imbedded in concrete work and drilled with 3/4-inch holes from 9 to

parts and for observation. The construction provides for a chamber in which the sewage is subjected to the action of anaerobic bacteria or a septic

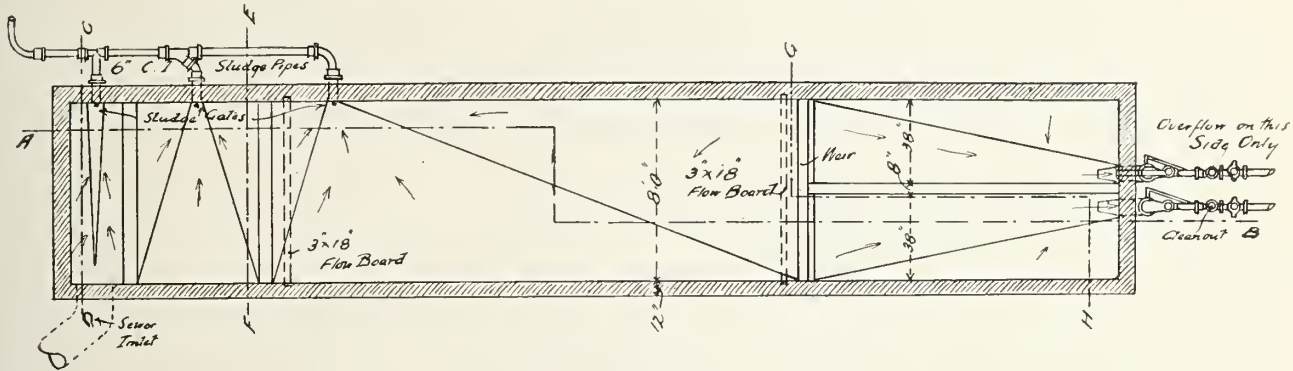


CROSS SECTION G-H

chamber, and for the discharge to be sprayed on a coke bed, where the aerobic bacteria may work and the intrification of the sewage be effected. From the

Here's where anybody has another guess coming.

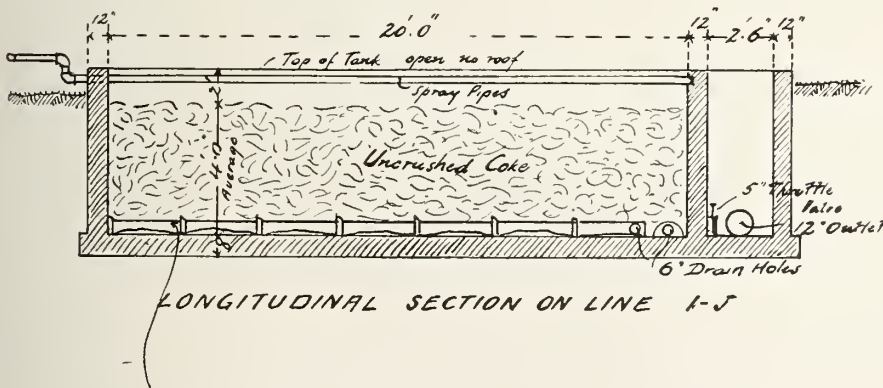
The circumstances under which the jobs are installed and the work required are all so different that it would be hard to strike a fair comparison. Any job will consume all the fuel that can be shovelled through the fire door. Perhaps a fitter puts in a good hot water job into a certain house. It works fine and the owner is delighted. The fitter has, say, ten other houses to heat and he puts hot water into all of them on the strength of the first successful hot water job. Four out of the ten turn out to be failures as might be expected. You see the fitter neglected to study the requirements of each job. Had he done so there would have been no failures. A skillful tailor cuts his cloth to fit his man. Ready-made clothing is generally bun fitting. Take a hint from the wise tailor and make each job to fulfill the requirements of the building in which it is installed.—D.C.H.



PLAN OF PRIMARY TANK

18-inch centres. The liquid sewage is discharged from these pipes into the secondary tank, which is filled 4 ft. deep with clean, screened, medium-sized coke. The bottom of the tank is well graded

plans and elevations the dimensions can be taken and the description gives the amount of sewage which this unit of the projected plant is expected to treat acceptably.



LONGITUDINAL SECTION ON LINE I-J

to the outlets and well covered with 8-inch half pipes as shown.

There should be a roof over the primary tank, proof against the entrance of flues as well as weather proof, and provided with tight trap doors at four points to afford access to the working

## WHICH?

Editor Plumber and Steamfitter.—Will you kindly tell me which kind of heat you consider the most economical, steam heat, vapor, or hot water?

Reader.

## PACKING NEW RADIATOR VALVES

Editor Plumber and Steamfitter,—Quite frequently when I put in a steam job I find that it is necessary to repack the valves, or they will leak around the stem when one fires up the job. Is this the usual thing with valves?

P. J. Walsh.

Depends upon the kind of valve you use. A valve that requires no packing will not, of course, leak. The others should all be looked to and the most convenient place and time is at the bench just after the valve has been made on to the stub. Remove the factory packing and use some asbestos wicking and a very little lard oil upon it. Make a first winding, send down the cap and then back it off and place some more wicking around the stem. This second packing should make the job tight and so complete the the valve will not require repacking for several years. Try it out on your next job and keep track of it.—D. C. H.



# Running Sewer Without Opening Street

How Problem of Replacing Sewer and Making Connections Without Interrupting the Service or Opening the Street Was Satisfactorily Solved.

ALMAST writes in Metal Worker as follows:—

In connection with one of the large municipal buildings in the city in which I reside, it became necessary to replace a 12-in. cast-iron sewer line which had become leaky at the joints through expansion and contraction due to the discharge of exhaust steam into this house sewer line. Owing to the fact that the sewage from some of the buildings which had previously drained into this 12-in. line was disposed of in another way it was determined when the leaks had to be stopped to reduce the size and the contractor was called upon to install an 8-in. house sewer and make all of the

new sewer had to be run through a vault that was used for storage of coal. The specifications required that it should be protected and in consequence it was run through a duct which was covered at the top by means of concrete slabs arranged to rest on angle iron so that they could be removed in case of necessity. By this means the discharging of coal into the vault could not strike directly on the pipe so as to have any effect on it; neither would the removal of the coal from under the pipe leave it without support.

When the point had been reached where the sewer line leaves the front wall trap and connect with the sewer, an in-

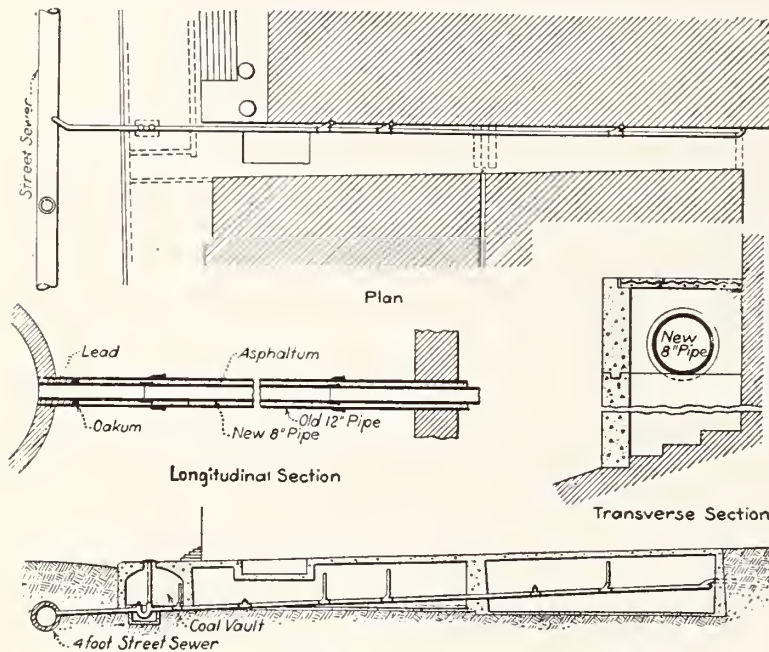
sufficient clearance to avoid any inconvenience. Four sections of this 5-in. pipe were caulked carefully together in the basement late one Saturday afternoon and then were extended through the abandoned 12-in. line till the end came flush with the sewer.

When this part of the work was taken up a man was sent into the sewer with all the necessary equipment for caulking a tight joint at the point where the new 8-in. line came flush with the end of the old 12-in. cast-iron pipe at the sewer line. His first step was to make a roll of selected oakum that was driven into the space between the two pipes to a sufficient depth to receive ample lead to make a tight joint when it was caulked. After the oakum was in place the next step was to use a clay mould on the pipe with an opening at the top into which the molten lead was poured to fill the space between the two pipes to the oakum. Then on the removal of the clay mould the work of caulking the pipe was expeditiously and carefully completed.

When this work had been finished at the outer end of the new sewer line a clay gasket was put around the pipe in the cellar and sufficient quantity of hot asphaltum was poured into the opening thus prepared to fill entirely the space between the two pipes in order to protect the inner drain from corrosion.

The accompanying plan and elevation show the run of the sewer and the branches which had to be taken care of during the time of the substitution of the 8-in. sewer line for the 12-in. line. The section shows the method of protecting the 8-in. sewer line as it run through the coal vault and also gives an idea of the space between the 8-in. and the 12-in. pipe to allow the hubs to pass and also the space that was filled with asphaltum.

It might be added that the work was commenced at the back end of the drain and carried forward because of danger of a rainstorm filling the leader and branch after branch had to be removed and its substitute installed as the proper point was reached. Twelve-inch brick piers were built under each hub and the pipe was tested with water for five hours. Although a precisely similar situation might not arise very often, this job is of value in showing how foresight will often avoid difficulties.



Details of sewer installed without opening street.

connections without interfering with the every-day use of the house drain during business hours.

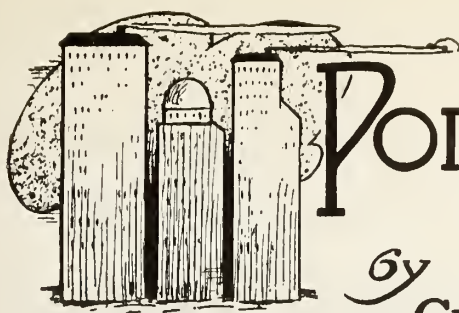
The contractor on making a careful examination of all the conditions which he would have to meet and getting all the exact dimensions necessary discovered that the new 8-in. sewer line could be run to the sewer through the old 12-in. sewer line.

The work within the building was comparatively simple aside from the fact that everything had to be done at night, on Sundays or on holidays, then left in such condition that the drainage system could be used during the day. It involved replacing a sewer line nearly 150 ft. in length. One section of the

teresting part of the work was taken up. It would have been exceedingly expensive and would have entailed much hard labor to have drilled through the concrete walls and tunneled to the street sewer to have opened up the roadway and the sidewalk. But through good fortune and careful investigations of the contractor the expense, labor, delay and annoyance were all avoided by using the old 12-in. sewer line as a sleeve where it passed through the walls for the new 8-in. line.

The new line was made of extra heavy cast-iron pipe in 5-ft. lengths, the hubs of which luckily were of a diameter that passed through the 12-in. line with





# POINTS ON HEATING

By  
CHAS. H. DENISON



By Chas. H. Denison.

In the previous chapter several pointers were given regarding the selling game as pertaining to the man in the plumbing line, and it was shown that many sales were lost not only because the plumber failed to boost the goods, but also that he was not more than five-spot high in the race when it came to knowing how.

If certain institutions can afford to spend not only their time, the time of their employes and thousands of dollars besides in order to find out just when and how to reach out and to so appeal to the public that the dollars will come flowing in, it would seem to a man up a tree that the least that the men in our craft can do is to study and seek to get a grasp on the game, so that they can present their facts of the case in a convincing manner, for, believe it or not, as you please, they not only have the better of the argument, but they have the game in their own hands if they can get together and make united efforts. We will have to admit that when it comes to selling goods, the catalogue has it all over the plumber. Not only that, but as to showing the goods also, though how a dimly dark colored cut on cheap paper can cut the ice it does, and yet get away with it, is something of a curiosity. It's the way the story is told. That must be it. There is, however, another side to the question which does not appear upon the surface, nor, perhaps, for some time afterwards, and that is: how do the goods fit, and how do they last? Those questions seldom occur to the buyer as he reads about the dollars he is going to make when he invests in the proposition.

Now, take any article you please to name. There are various grades made by different manufacturers, good, bad and indifferent. Let's apply a little of the "horse sense" that mechanics are supposed to have about facts and affairs, to this matter. It stands to reason that if a man can make a good article and sell it at a living profit, others are going to engage in the business also. They will try to get the trade (generally) by selling at a lower price. To do this they must do one of two things. Either produce a superior article at the same price—and prove

it beyond doubt; or else sell cheaper. If they sell cheaper they must make a cheaper grade of article in order to make the profit they must have or quit business.

When one buys any line of goods for from one-third to one-half less than men who have been in business for years can furnish the article for, you can gamble that there is a screw loose somewhere. The plumber fails to prove the lasting quality of both his goods and his work, and in so doing, he loses at least fifty per cent. of this trade that he should nail for his own, and sees the money go sailing away building up businesses that are existing, extending and making good on a proposition that has not half the merits of his own business. Any man that claims that a ready made suit of clothes fits as well as a tailor-made suit is clean daft. Why should a ready-made plumbing or heating job fit as well as one made to fit on the spot? The answer is that they are just about similar. The ready-made suit requires alterations—and, sad to state, sometimes never fits well. Neither does the ready-made heating or plumbing, and here is where the plumber should score and score heavy. But he can't make a very loud hit unless he has been in the habit of doing first class work himself. If he's been playing a bunco game along the line of installing goods, he is in a poor position to attempt to say what anyone else does or does not do.

Some men who are running plumbing shops have made it a point to get possession of certain goods that have been installed by blacksmiths, carpenters, painters and "handy men," who thought that they were plumbers—and found out differently after it was too late.

Another point that one's common sense should bring to realization, and that is that no man can, on the spur of the moment, take up a job or a profession and aided by any book details or description, do as good a job as can the man who has spent years in acquiring proficiency at that particular trade.

So, therefore, it would seem that with these points and many others that will at once suggest themselves to the

reader, that the plumber has all the best of the game, if he but goes into it with vim and understandingly. The trouble is that plumbers fail to unite for their common good. One or two or ten or one hundred can do but little good. A thousand or ten thousand might, mutually, make some headway. It's up to you, my plumber friend. What are you going to do about it?

## New By-laws Carried.

Sudbury, Ont.—A plumbing and sanitary by-law, and an electric wiring by-law, introduced by Councillor Tuddenham, have received their third and final reading in the council, and will become effective June 1. The by-laws impose the necessary conditions on all plumbing and wiring in Sudbury in future, in accordance with good practice in each trade. They also provide for the appointment of an inspector, the proper qualifications of workmen, the filing of reports on all work done with the Town Clerk, and a general control of the work of tradesmen in both the departments by town officials, for the safety of life and property of citizens.

## Invents Wrenches.

Kingston, Ont.—T. J. Nicholson, of this city, has just been awarded a patent in the United States and Canada, for two wrenches, which will be of great service to plumbers and steamfitters in their work. He has secured patents on a chain wrench and a nickel plated wrench. On the former the chain tongs are on an entirely new principle, having a grip on the chain, instead of in the stalk, as on all chain tongs in use heretofore. It will take a hold of fittings and the faces of flanges that other wrenches will not touch.

It is easily sharpened by the grinding of the teeth on the chain, and it will not squeeze or crush the pipe. The nickel plated wrench will take all standard sizes of nickel plated pipe, and is superior to anything heretofore patented. The two wrenches were brought before the local plumbers' union a few days ago, and were approved of. Mr. Nicholson is being congratulated on his success.



# The Use of Tile Pipe for Drainage

**A**N interesting installation was recently completed in Winnipeg, by Thomson & Homer in the Sterling Bank building. The accompanying illustrations show the discharge pipes installed. They are below the level of the sewers. The sewage is pumped up to the sewers through these pipes.

This arrangement has become necessary in all buildings of unusual height. The tendency to build skyscrapers has brought about the necessity of sinking the foundations to a greater depth. In consequence the sewage from practically all high buildings has to be pumped up to the level of the sewers.

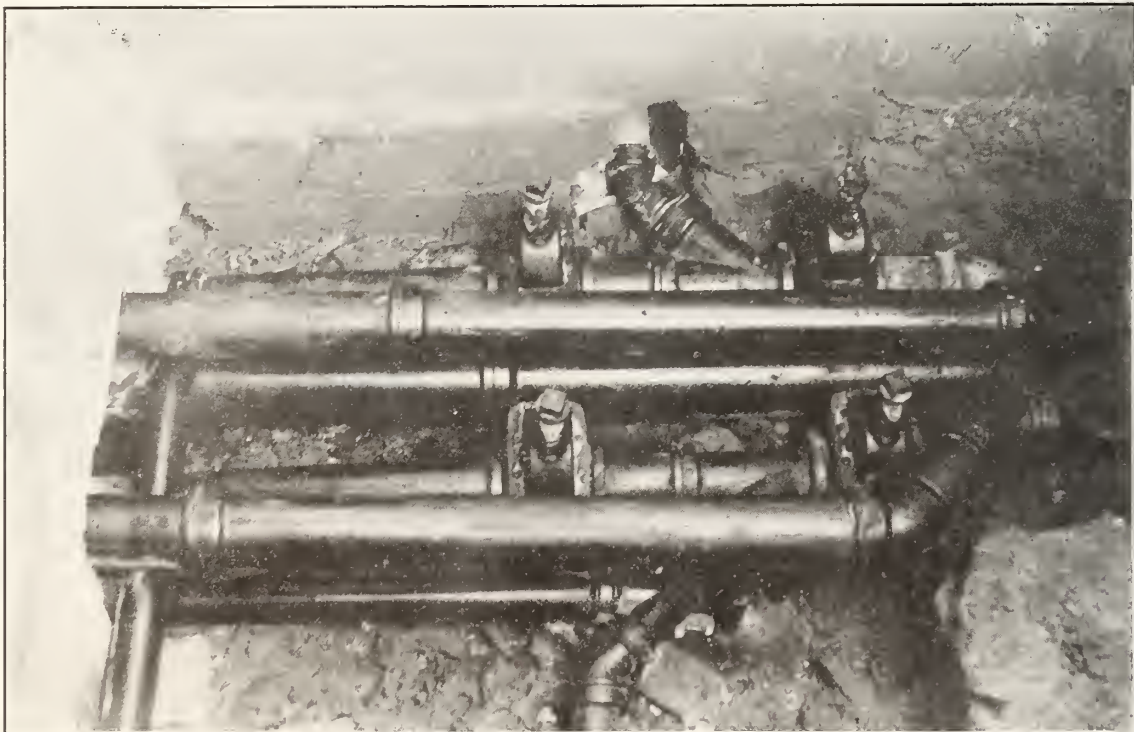
The question of drainage is particularly interesting to the trade at the present moment. Regarding drains, the following letter has been secured:

"The only purpose for which a tile pipe will be allowed in the inside of any building in Winnipeg is for rainwater purposes only. That is to say, we are allowed to take tile pipe from the base of all rainwater stacks, run them underground and discharge into an open built catch basin. From there the rainwater passes through a cast iron trap on the inside of the building and into the main sewer as usual.

"There is one point that we will not stand for, and that is, that on no consideration will we allow tile pipe to be

installed inside of a building for the purpose of carrying off sewage from W. C.'s, or wastes from baths, basins,

or sinks. There is no use of reverting back to methods of 50 years ago, unless  
(Concluded on page 20.)



# Laying Out a Heating Job

Useful Pointers for Fitters as Outlined by Don. Rex—The Wisdom of Planning an Installation Thoroughly Before Starting to Work.

**D**ON Rex writes in the Plumbers' Trade Journal as follows:—

The amount of profit realized on a job of heating is largely dependent upon one principal item of cost of installation—we refer to the cost of the item of labor. The contractor when figuring the job is able to determine the cost, or to estimate very closely, the prices of all the various material items to complete the work, with the exception of that of labor. The cost per day of this item is, of course, known but the length of time required for the completion of the contract is often underesti-

who is without a knowledge of draughting or the ability to produce finished sketches. For purposes of illustration let us consider a medium-sized house, of which the first and second floors are to be heated with an accelerated system of hot water. Fig. 1 is a first floor plan of the same, Fig. 2 the second floor, and Fig. 3 the basement or cellar plan. The locations and sizes of the various radiators are marked on Figs. 1 and 2, and a piping plan showing the flowing, or supply pipes, is laid in on Fig. 3.

Now, as before stated, let us suppose the successful heating contractor to be

all radiators. If two mains are to be run, as noted on the work illustrated, designate the different radiators supplied by the front one 2, 4, 6, etc., or by "even" numbers, and those supplied by the main leading to the rear of the building 1, 3, 5, etc., or "odd" numbers. If desired this system of numbering may, of course, be reversed.

On a separate sheet draw parallel lines representing the basement and the first and second floors, as shown by Fig. 4, on which locate and number the radiators and fill in the strokes indicating the piping. Horizontal lines repre-

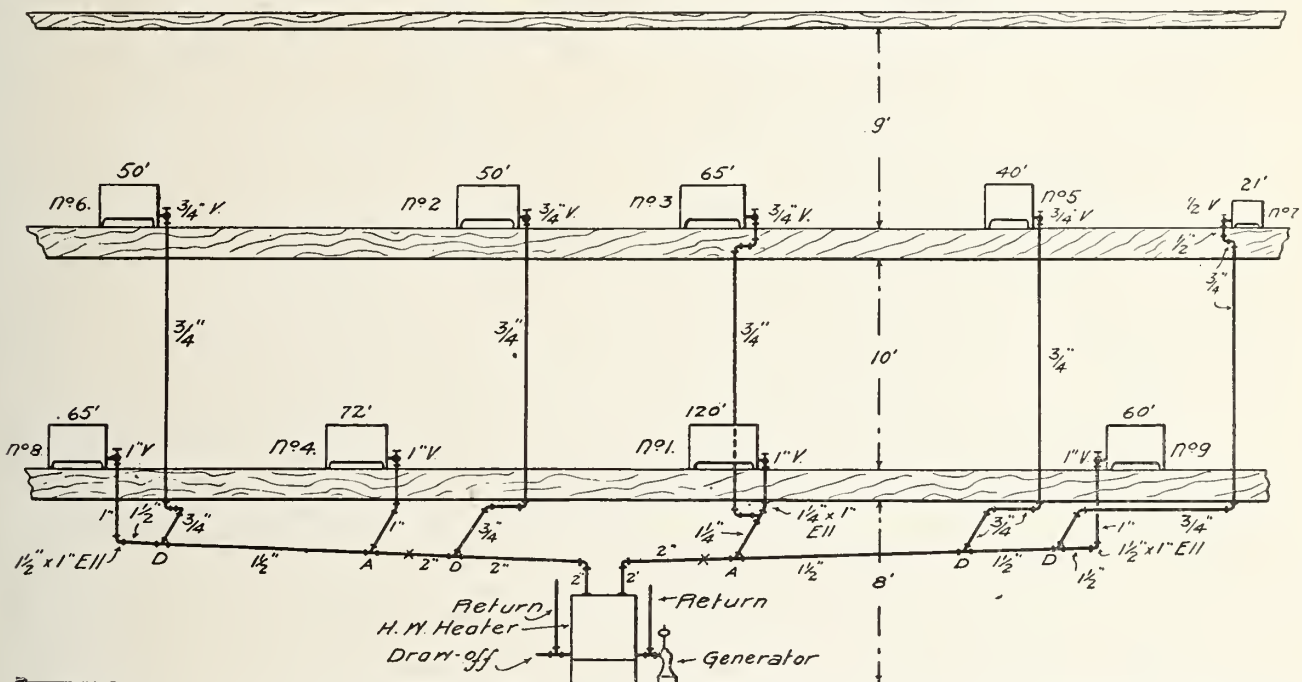


Fig. 4.—Outline of piping in medium-sized house of which the first and second floors are to be heated with accelerated hot water.

mated, with the result of lessening the figured profit on the work. Close competition requires keen judgment in estimating in order to secure business, and having obtained a contract we should employ every legitimate means to reduce the cost of installation.

There are several helps the contractor may give to the steamfitter in charge of the work which will save time and frequently prevent errors, the chief one of which is the ability to lay out or plan the piping in such a manner that the fitter will know just what is required in pipe sizes and understand exactly how each radiator connection is to be made.

The provision of this help is not a difficult task to acquire, even for one

unaccustomed to making plans. He knows how the piping should be run and desires to acquaint the fitter, who is to

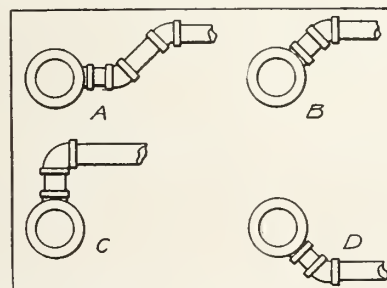


Fig. 5.—Different styles of connections.

do the work with his ideas. First, mark the location of the heater and number

sent mains, vertical lines risers, and oblique lines branches. A right or left angle turn (90 deg.) is marked "X" on the main, and a 45 deg. turn is marked "J."

Mark the sizes of all mains, branches and risers. Next indicate the character of all connections from the main, whether A, B, C, or D, which represent methods shown by Fig. 5, and letter each connection as illustrated on Fig. 4.

With this sketch on hand the steamfitter understands precisely what is required of him and can readily carry out the ideas of the heating contractor, and it is surprising to witness with what confidence he will tackle the work and what progress he will make.



# PLUMBER AND STEAMFITTER

The greatest number of errors is made by fitters when they are working on a job where a portion of the material—possibly the boiler or the radiation—has not been delivered. To overcome such trouble we advise that no work be started until the boiler or heater is set in position and, if possible, until all radiators have been distributed to the places they will occupy.

The journeyman steamfitter should never be bothered with the delivery or

The first includes the use of a tabulated sheet of paper or card having on one side the name and location of the job, its kind (steam or water), a number of blank lines to enumerate special features such as coil for domestic water supply, the location and connection of expansion tank (if water job), etc., and the complete schedule of the rooms to be heated, together with the size, height, length, tapping and style of radiator for each room. On the reverse side of the

ten or pasted the following information:

Schedule of pipe and fittings, giving lists, areas, and measurements.

Schedule of various kinds of valves, union elbows, etc., giving dimensions.

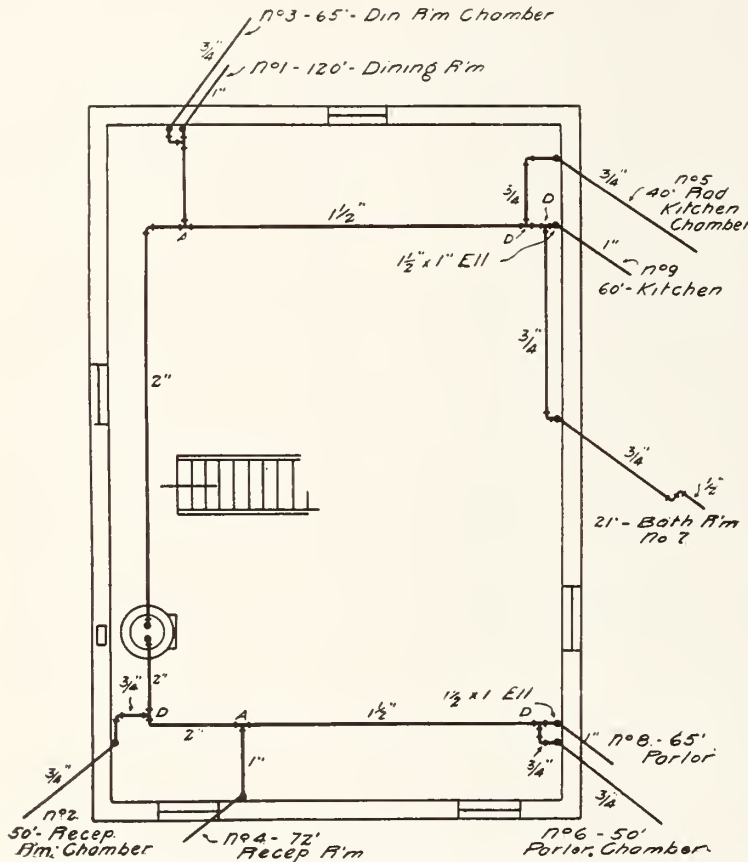


Fig. 3.—Basement piping plan showing position of the flowing or supply pipes.

handling of the radiators. The contractor or a clerk, with a schedule of the job in hand, should accompany the drayman to the building and there direct the distribution of the radiators, providing extra help, if necessary. Do not use the steam-fitter, whose labor is expensive, for this purpose. Any error in the size of a radiator, or, further, the possible fact that any one radiator cannot occupy the position intended for it, is at once discovered and the necessary change provided for without confusion or loss of valuable time.

In some localities it is customary to rough-in the job, leaving the radiators, valves, etc., to be delivered and connected and the job finished when the erection of the building is approaching completion. Where this practice is in vogue many schemes for saving time have been tried, and in this connection there are two plans which are worthy of mention.

sheet are printed the roughing-in measurements of the various sizes of valves and union elbows, blanks for a record of the steam-fitter's and helper's time, and such other records as it is desired to keep in connection with the installation.

We favor this plan though to us it seems to have the one objection that when the card is returned to the shop by the fitter he is left with no information whatever regarding the work. The measurements of valves, fittings, etc., should be on hand or in the possession of the workman continually.

We prefer a second plan which provides all of the information accorded by the first and at the same time establishes a permanent record. This is the steam-fitter's hand-book, which may be compiled by a clerk in the office, as many copies as necessary being prepared and one loaned to each steam-fitter employed. In this book should be writ-

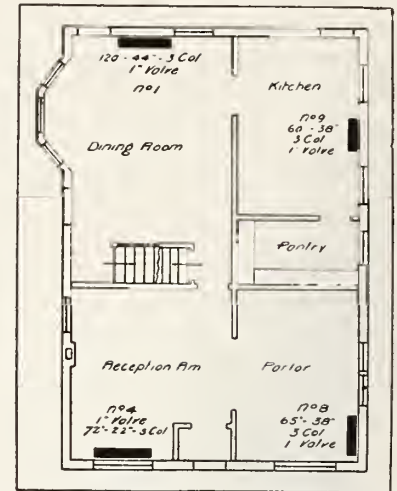


Fig. 1.—Location and sizes of radiators on first floor.

Data concerning sizes and measurements of different makes of radiators, including the boxing or casing of indirect radiators, size of hot and cold air ducts, registers, etc.

Rules and data for estimating radiation, coil work or coil building, and other rules, tables, etc., so frequently needed in the every-day work of the steam-fitter.

The fitter who from the start keeps a hand-book of this character will in a

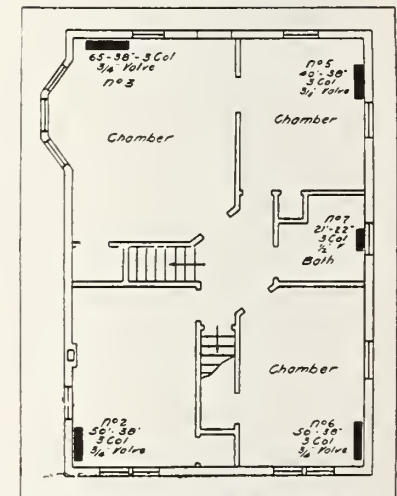


Fig. 2.—Position and size of radiators on second floor.

short time have it so well filled with information and records of constant use that it will prove of invaluable service to him. A flexible leather-covered and indexed book about 5x7 inches in size will be found best suited to the purpose.

# Complete Course in Sheet Metal Work

By L. W. KOSER

On plate 15, Problem 12, is a T-joint between two pipes of the same diameter.

There are two patterns that we wish to develop in this case.

First, the pattern for the piece A. to mitre into the piece B.; and second, the size of the opening to cut out of B. to accommodate A.

This piece is shown by H., Fig. 5.

The easiest way to get the opening H. is to develop the pattern for the piece A., then place it against B. and mark a line around it. Then cut out to this line, or allow about an inch inside for cutting and flanging into A.

Where strength is needed these flanges can be riveted.

While this method is the easiest to understand at the start, it is by no means as quick, nor does it give as neat an effect as developing in the flat.

Before developing the pattern for the piece A., we must develop the mitre line for A. mitreing into B., as shown by the lines O. T. and O. W.

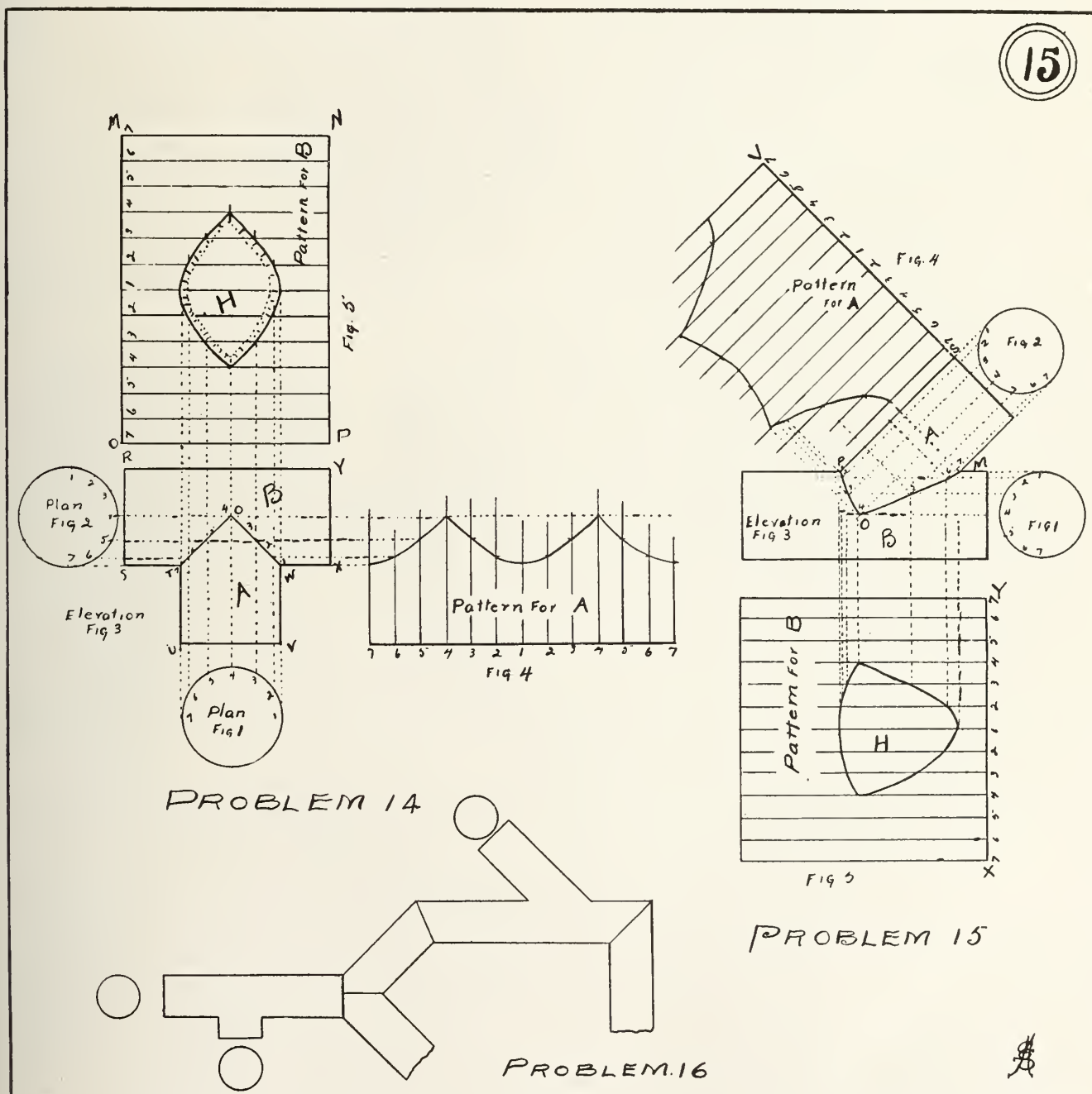
Draw the plan, Fig. 1, then the plan, Fig. 2, in such a position that when vertical lines are projected up from Fig. 1 and horizontal lines from Fig. 2 the lines so projecting will form a T-joint,

as shown by the outline, R. S. T. U. V. W. X. Y., Fig. 3.

Now step off Fig. 1 into equal spaces, having No. 1 on the right, and No. 7 on the left. This gives No. 4 exactly in the centre.

Now step off Fig. 2 into the same number of spaces, having No. 1 on the top and No. 7 on the bottom.

Now project a light or dotted line up from No. 4, Fig. 1, any distance so it will pass a line carried horizontally from No. 4, Fig. 2. Carry lines up from Nos. 5, 6 and 7, Fig. 1, and carry horizontal lines from Nos. 5, 6 and 7, Fig. 2, until they intersect. Also carry lines from 3,





2 and 1, Fig. 1, until they intersect lines from 5, 6 and 7, Fig. 2.

A line traced through the points of intersection gives the mitre lines O. T. and O. W.

Now lay out the stretchout, Fig. 4, at right angles to V. W., and draw the usual measurement lines through same.

Now lay the T-square parallel to the stretchout line, bring it against No. 4 on the mitre line and cut No. 4 measurement line; then against No. 3 and cut measurement lines Nos. 3 and 5, then against No. 3 and cut lines No. 2 and No. 6, then against No. 1 and cut No. 1 and No. 7. A line traced through these points gives the pattern.

To get the opening H., first lay out the stretchout of Fig. 2 directly above the elevation, as shown by the outline M. N. O. P., Fig. 5, starting with No. 1 in the centre and spacing both ways, draw the measurement line No. 3, also from No. 6 and No. 7 and cut lines No. 2 and No. 1 respectively.

A line traced through these points gives the opening H.

Problem No. 15 is an oblique connection between two pipes of the same diameter.

Draw Fig. 1 and Fig. 2 and from these develop the outline of the elevation, Fig. 3.

We first want to get the mitre line O. P. and O. M.

Divide Fig. 11 into equal spaces and project horizontal lines from each.

Divide Fig. 2 into the same number of spaces and carry lines parallel to the line P. S., from the points, Nos. 1, 2, 3 and 4, until they meet lines carried from Nos. 1, 2, 3 and 4, Fig. 1. Then carry lines from 5, 6 and 7, Fig. 2, until they meet lines from No. " and L, Fig. 1.

A line traced through these points gives the mitre line.

Lay out the stretchout, S. V., at right angles to the line P. S., and draw the measurement lines parallel to P. S.

Then place the T-sqr. so it will run parallel to the stretchout line. Bring it against point 4 on the mitre line and cut No. 4 measurement line.

Then bring it against each of the other points on the mitre line and cut the measurement line having the corresponding number and the pattern is developed.

To get the opening H. for the pipe B., lay out the stretchout of Fig. 1 directly below Fig. 3 and draw the usual measurement lines.

Place the T-square parallel to the stretchout line, Y. X. Bring it against the points, 1, 2, 3, and 4 on the mitre line and cut the measurement lines, 1, 2, 3 and 4, then bring it against 5, 6, and 7 on the mitre line and cut the

measurement lines, 3, 2 and 1, respectively.

Problem 16 gives a general exercise on the pipe work done so far.

Develop the different mitre lines, patterns, and openings for this problem.

## THE USE OF TILE PIPE FOR DRAINAGE.

(Concluded from page 16.)

these methods prove by demonstration that they are better from a practical point of view, than our present day methods, and any engineer or plumber who has studied the business and knows the slightest bit about it, knows that tile pipe has caused more disease, infectious and otherwise, than any other form of sewage disposal by water carriage. I myself have tested and inspected thoroughly, tile pipes laid for the removal of sewage and waste, and found them tight, but have had occasion to go back several months afterwards to test the same pipes and found them leaking very extensively.

"This may seem curious or doubtful to you, but is nevertheless true. The cause of the after trouble was generally through careless tamping of the trenches or the settlement of buildings. No city of any consequence in America, or Europe, with an engineer of any standing, would sanction the use of tile pipe for sewage disposal.

"Tests have been made of cement joints on tile pipes in almost every conceivable way, some with a gasket in front, then the cement applied afterwards, some with lead collars in front, with plain cement or a mixture of cement and sand and invariably in the setting of the cement, no matter how well the joint be trowelled, little cracks appear on the surface, and these open up right to the end of the cement, which you can demonstrate at any time yourself."

WESTERNER.

## WORK THAT SHOULD NOT BE PASSED.

Editor Plumber and Steamfitter: Very recently I observed the installation of a drain, etc., which seems to me was dead wrong. It was under a building that had no cellar. The drain ran from the back of the building to the street, a distance of probably one hundred feet, and was buried perhaps three feet deep. A cement floor was slapped down in the building. Now, with no cellar, and a cement floor, I would like to know how that drain can ever be reached in case it becomes necessary to make repairs? —N. H. Parsons.

This is but another instance of a lack of foresight. Undoubtedly the drain will freeze up in the winter time, and cause an endless amount of trouble. Until there is an end to the penny-wise policy of both individuals and cities, just such instances as related above will be constantly happening. A good plumbing ordinance with inspectors enough and plenty of nerve would materially reduce such poor work.—D.C.H.

## FLOOR SCRAPER.

The accompanying illustration shows a new floor scraper just put out by E. C. Atkins & Co. It is 11 inches long and made of solid metal. The handles are of easy grip pattern. Two thumb screws hold the blade securely in place, and the centre thumb screw presses it into convex form, so as to hug the lumber closely and make a smooth and even cut. Being made of metal, it does not wear easily. Its weight causes it to run smoothly.

## New Company Formed.

Ottawa, Ont.—Chas. Smith, J. Barrette and J. Cinq-Mars have opened up in business here under the name of the Ottawa Plumbing, Heating & Sheet Metal Co. Canadian firms are requested to send catalogues on plumbing and heating work.

## New Plumbing Firms.

The following new firms have started in the plumbing business in the West: Fred Read, at Prince Albert; James Brandon, at Saskatoon; Pierce & Scott, at Saskatoon; Charles Geiser, at Saskatoon; Seater & Parnell, at Saskatoon.

## A Plumbing Department.

Battleford, Sask.—The annex to the Battleford Furniture Co.'s store has been completed, and is now equipped with an up-to-date plumbing and steam fitting establishment. One feature of the newly-appointed store is a bathroom display.

On June 15th, Montreal will receive a visit from the representative party of manufacturers and business men from Great Britain who are making a tour of inspection through Canada. In a letter to the mayor of this city, the Hon. Geo. E. Foster states that the object is not to spend very much time on ceremonies and banquets, but to bring these gentlemen face to face with the most compact and pertinent information possible with reference to the resources of Canada and the possibilities for development of the different industries with which they are connected.



**DART**

## A Time Saver and A Protection For Every Plumber

DART UNIONS make faultless joints easily and quickly—whether pipes are in or out of line—joints that stay tight until deliberately loosened and then may be connected as before always retaining their high efficiency.

This trade mark **DART** is your

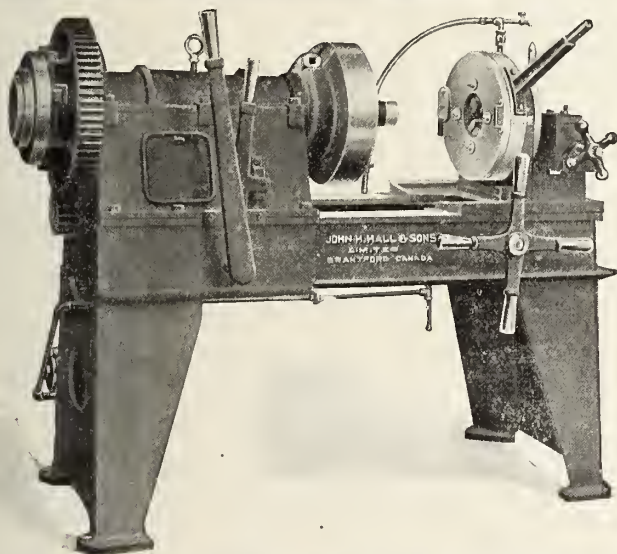
protection. We will replace any DART UNION proving defective 2 for 1.

Give them a trial  
and be convinced.  
Your jobber sells  
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Limited  
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## PIPE THREADING MACHINES

MADE IN CANADA.

ALL SIZES.

Belt or motor drive for the plumber, the jobber, or the mill, also Double and Single Head Rapid Nipple Machines.

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GUARANTEED  
To Give Complete Satisfaction



These tanks are strong and durable. They contain no lining to be affected by any alkali in the water, and eliminate the trouble of splitting, which frequently occurs in the wooden tank. Above all they are more sanitary. Every progressive plumber should have a sample outfit.

The  
**James Morrison Brass  
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SETTLEMENT OF ESTATE MAKES IT NECESSARY TO DISPOSE OF BUSINESS.

SALE WILL BE MADE PRIVATELY IN PART OR IN WHOLE. PURCHASER CAN HAVE PRIVILEGE OF RENTING PRESENT FACTORY AND MACHINERY FOR GIVEN PERIOD. BOX 675, PLUMBER AND STEAMFITTER, TORONTO. (12)

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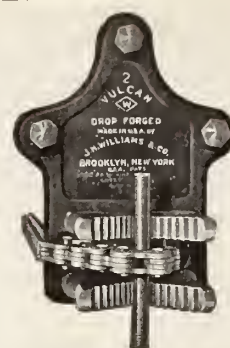
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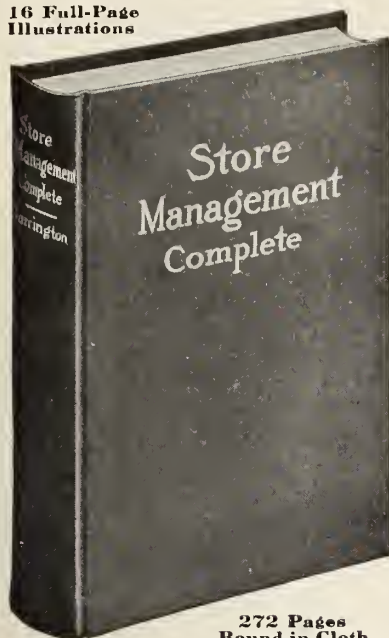
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A Companion Book to  
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"Store Management—Complete" tells all about the management of a store so that not only the greatest sales but the largest profit may be realized.

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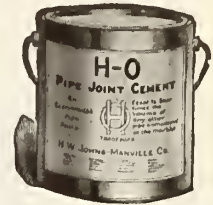
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143-149 University Ave., Toronto, Canada

## 1 lb. H-O Equals 4 lbs. of Any Other Cement

Why? Because it is furnished in powdered form. Add the liquid (water or linseed oil, according to its use) to a pound of H-O and you have four pounds of cement at the cost of one pound of the ready-mixed kind.

It is the cheapest at the start and the cheapest in the end, as none is wasted. Mixed as needed, it does not dry out and become useless.



## H-O PIPE JOINT CEMENT

is the only cement that hardens and expands after a joint is made up. It won't stain marble or tile and is not oily.

H-O does all that any other cement will do, *and more*, and only costs a quarter the price. What more could you ask?

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Nickel-plated. With china index handle. "A quarter turn gives a full opening." Tail screwed for 1-4 inch iron pipe.

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¶ "If there is one enterprise on earth," says John Wanamaker, "that a 'quitter' should leave severely alone, it is advertising. To make a success of advertising one must be prepared to stick like a barnacle on a boat's bottom."

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Ask any user—he is the man who will tell you what real die stock service is.

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You cannot afford to be without this time and money saver—get particulars and prices at once.

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Hot Water Quick Opening Radiator Valve.

## "Miller" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from 1/2" to 2", with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.

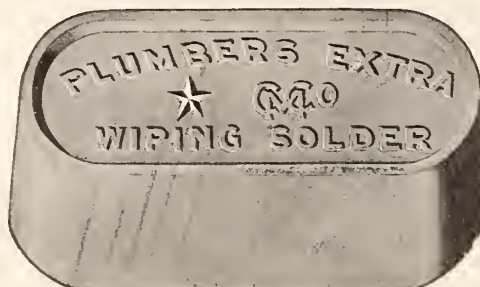


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IT WORKS LIKE  
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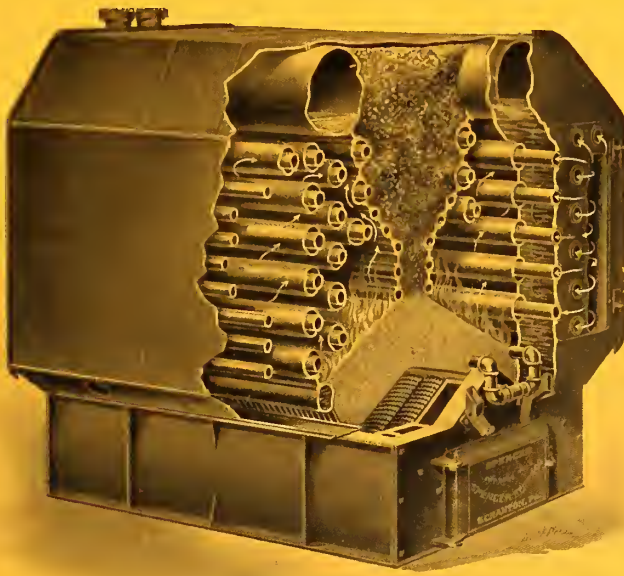
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## "How They Are Made."



TUBES—Knobbed charcoal iron.

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CONNECTIONS—Tubes expanded into the Headers identically the same as the construction of high pressure boilers.

MAGAZINE FEED—Is formed in the centre of the two complete sections, and will hold twenty-four hour supply coal.

ARCHED GRATES—Are used to assure uniform thickness of fire over the grates, causing the coal to burn evenly, and to slide from the magazine as it is consumed.

FIRE TRAVEL—There is no possible way for the fire to short circuit, as the boiler has a positive three-way fire travel.

NO WASTE FUEL—The grates shake freer at bottom than at top, and are specially constructed for burning cheap grades of fuel, without waste, and less fuel per square foot grate surface is consumed per hour.

SERVICE—One supply of Anthracite Pea Coal will operate the boiler for twenty-four hours and the grates will not require attention more often than every eight or twelve hours in the coldest weather, and **one half** the boiler may be operated in mild weather.

Visit our Show-rooms.

It will pay you to become identified with the Spencer Boiler in your district.

Write us for catalogue, prices and full information.

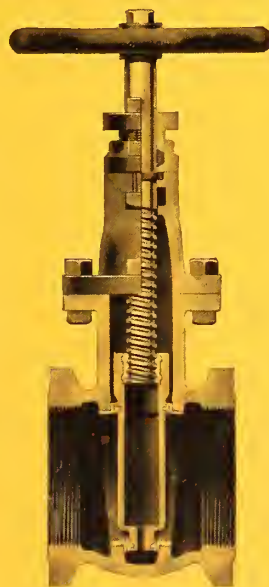
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If you have not used any of these New Pattern Valves, specify "KERR" in your next order. We want you to get acquainted with the most reliable valve on the market.



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Vol. VI.

Publication Office : TORONTO, JUNE 15, 1912.

No. 12



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The universal success, the never-disappointing operation of the Honeywell hot-water system has proven conclusively that the theory upon which it is based is correct even to the utmost detail.

An increased and positive circulation; an instantaneous heat under perfect control; quickly increased or checked; the use of smaller valves and piping; the sending of even heat into radiators at extreme distance from boiler; the one-end radiator tap, the saving of floors from "butchery": beams from weakening and ceilings from leak stains; minimum amount of piping an easy layout for the fitter, enabling expeditious placing of radiators, and the minimum cost of installation and operation.

All these points have been realized and proven by years of trial and thousands of plants in use in all countries.

Each feature combines to make the Honeywell the favorite method with house owners and the one generously and generally specified by far-seeing architects and heating contractors.

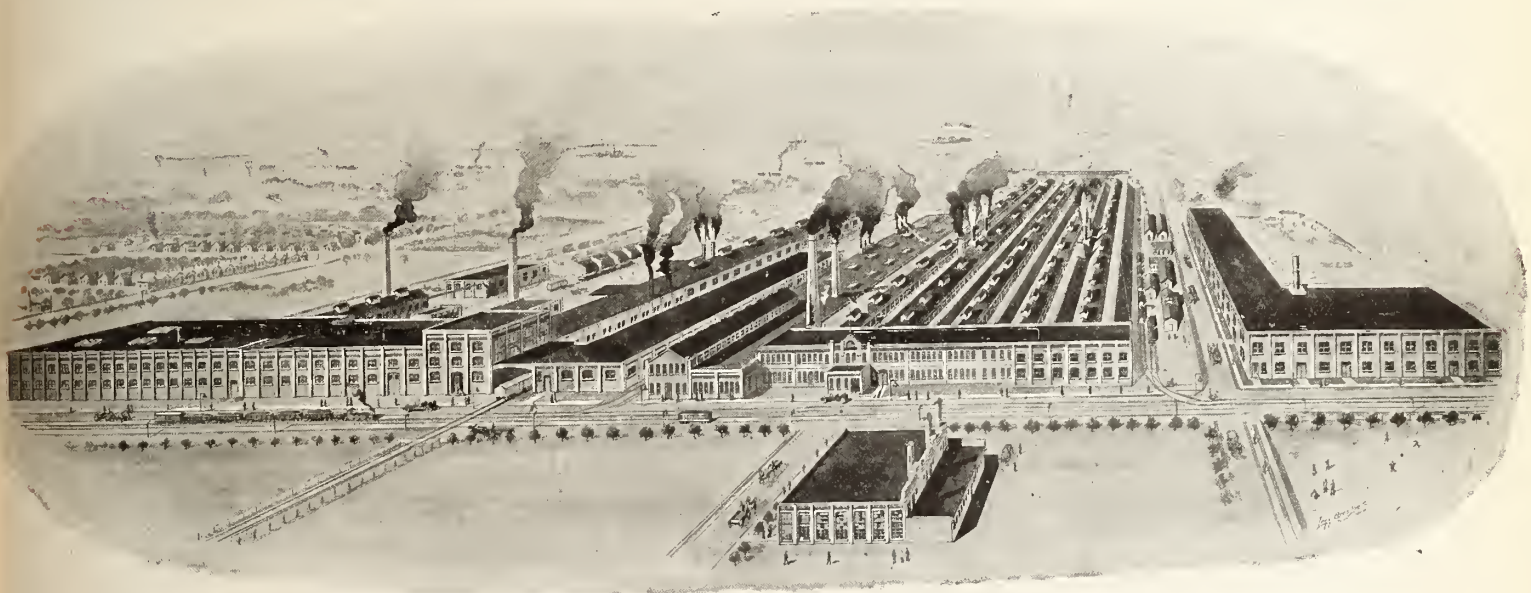
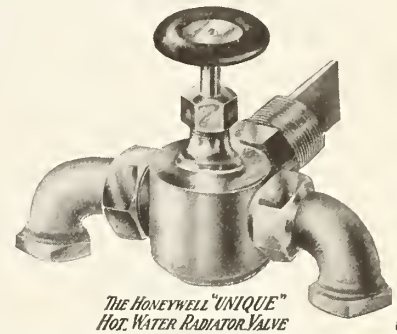
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## Malleable and Cast-Iron Pipe Fittings

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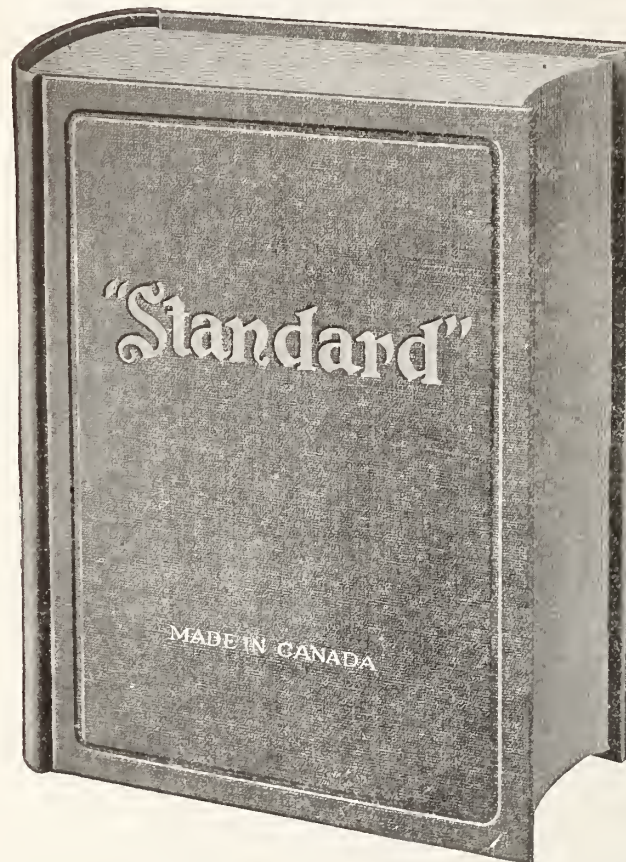


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A "Standard"  
Encyclopedia  
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Fixtures

676 Pages

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published

THE new "Standard Sanitary" Catalogue "P" which is now being distributed in Canada contains more than 1600 illustrations of plumbing fixtures, each of which is accompanied with a concise and comprehensive description. The illustrations are made from original photographs of the articles shown and represent the fixtures exactly as they will appear when installed.

Architects and Plumbers who have not made application for this catalogue should do so at once. Application Blanks especially prepared for this purpose will be sent upon request.

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# The "DAISY" Hot Water Boiler

## A Boiler That Will Increase Your TRADE

Every progressive plumber should investigate the selling qualities of this boiler.

It is the result of over 50 years of careful study of the hot water system of heating. Many exhaustive tests were made before the perfected boiler was placed on the market.

The "Daisy" Boiler is giving the Best of Service in over 50,000 buildings throughout Canada.

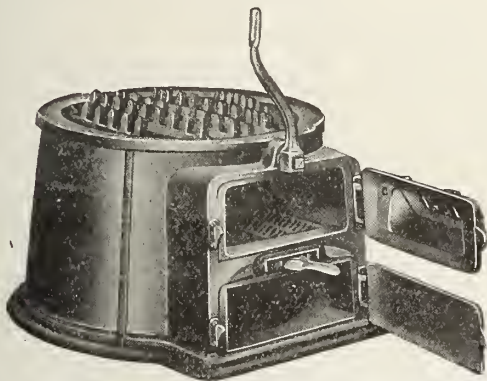
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

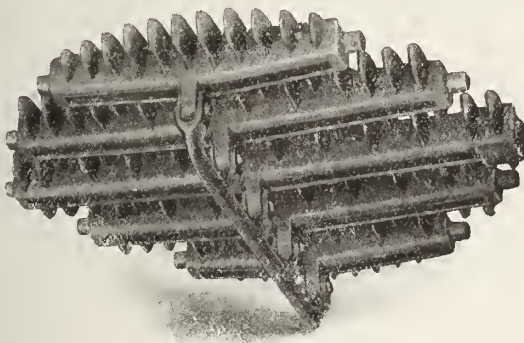
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a **minimum consumption of fuel**. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

The Daisy is a guarantee of efficiency and durability.



DEEP BASE OF DAISY HOT WATER BOILER,  
SHOWING ASH SIFTER AND GRATE



THE GRATE

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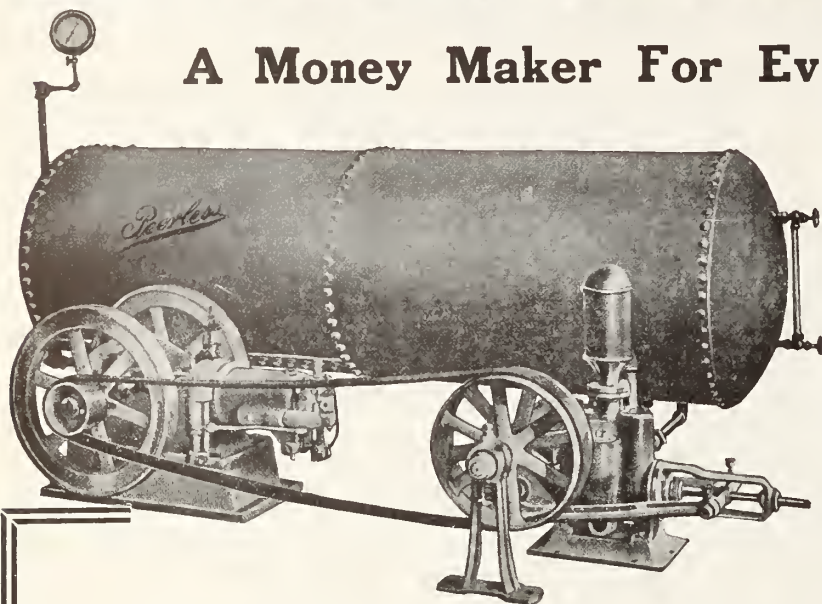
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The Wm. Stairs, Son & Morrow, Ltd., Halifax, N. S.



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**A Money Maker For Every Live Plumber**



## The "PEERLESS" Silent Electric HOUSE PUMP

300 Series.

This is a pump that is keenly appreciated by every user.

It is not expensive and will last a life-time.

Will deliver 125 gallons per hour, up to 40 pounds pressure; is double acting with only two valves and is perfectly balanced. Valves are solid rubber, quick seated under springs, operated with one-eighth horse power motor, wound for any current, and can be fitted with automatic switch for either pressure or open tank work.

Let us send you a sample

Test its selling qualities and you will buy again.

Write for Circulars

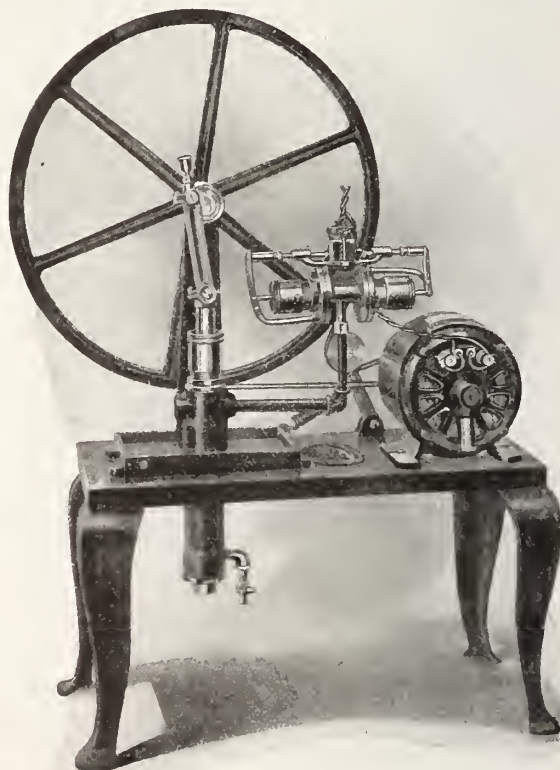
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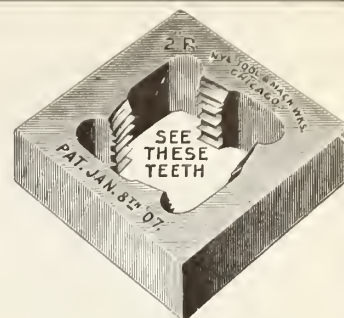
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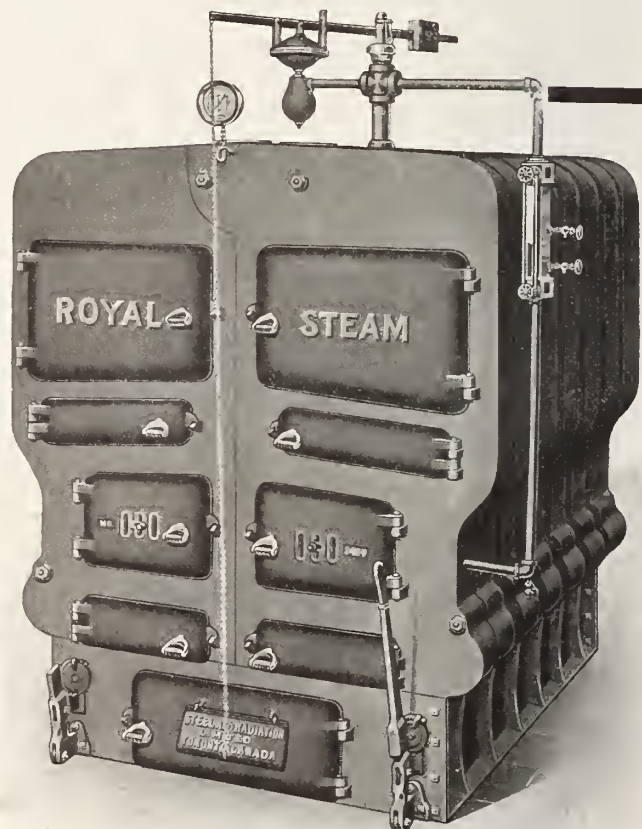
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# Arrangements for Calgary Convention

The Plans of the Committees are Now Reaching a Head—Trip to Banff and Banquet are Among the Entertainment features—The Manufacturers' Exhibition Will be Large—Spaces Nearly All Taken Already.

CALGARY, June 8. — The time is drawing gradually closer when the great gathering of the clans will take place, and history (as affecting the sanitary and heating world of Canada) will be made.

July should be (and from all signs, is going to be) a mile stone in the march of progress that will be of outstanding prominence.

The arrangements for the 17th Annual Convention are being drawn to a head and the Calgary Association feel that if they receive the support of the craft throughout Canada in the way they expect—by large attendance—this convention will be long remembered as an epoch in the annals of the craft.

A short outline of the arrangements projected will probably be acceptable to the readers of The Plumber and Steamfitter, and the following will allow the sanitary and heating engineers of the Dominion a chance to look forward to attending this convention with great pleasure and anticipation.

The convention of course, will convene on the appointed day, July 18, and it is hoped that every delegate will be on hand on that day, in order to simplify the work of the various commit-

*The convention of the Canadian Society of Sanitary and Heating Engineers is drawing close, and has become the uppermost topic among all connected with the trade.*

*In the following article, an outline of the programme is given as far as is possible at this date. It will be seen that the delegates who make the trip to Calgary will be given a royal time.*

*Are you going?*

tees, such as the credential committee and others; this being essential to the proper conducting of a business convention. Too often time is taken up in mere preliminaries that might be used to great advantage in the actual work of the convention, with the result that at the end things are rushed that are of great importance and more often than not are shelved for a year, when they might just as well have been handled at once.

There is not a member of the association throughout Canada but will heartily concur with this, and the Calgary Association take this opportunity of asking them to co-operate with us in the

getting done with preliminary work and getting down to real business.

This convention, being held as it is in what to most of the craft is totally new territory, must of course, be given up to a large extent to a division of time and events that will allow of the delegates and visitors seeing the country and its great resources. This, instead of being merely the pleasure end of the convention, has a distinct value to the work, as questions are bound to arise in future conventions that in their effect on the craft, requires a knowledge of conditions as affecting different districts in order to consider these questions in an intelligent manner. Therefore, we say that in studying local conditions when attending conventions, delegates are fitting themselves for better work at future conventions, and the benefits will be felt all over the Dominion.

## A Fitting Place.

Calgary, and indeed all of the Province of Alberta, in its wonderful development stands in a unique position, and is a most fitting place for this convention to be held, as at no time in Canadian history have the eyes of the world been turned to the West like the present; and this opportunity of seeing this



**CENTRAL CONVENTION COMMITTEE OF THE CALGARY A. S. & H. E.**

Reading from left to right:—Jas. Marr; R. J. Priestly, chairman Exhibition Committee; N. M. Burnett, chairman, Sports Committee; Chas. E. Good, chairman Entertainment Committee; F. A. McVeigh, secretary; E. J. Young, president and chairman; E. L. Martin, chairman, Financial Committee.



great western country is one that very few who can possibly spare the time, can afford to miss. The development of a new and great country is always most invigorating to witness, and the effect on the visitor is always a tonic one, sending him away with freshened mind to meet the problems of his own district, and by reason of this refreshment, to overcome them.

In laying out the programme of the convention, the Calgary Association has endeavored to combine business with pleasure in such a manner that each will be distinct, and yet each will have plenty of time allotted to it, so that the visiting delegates will feel that work is not being slighted when pleasure is on the boards, or that there is too much work when business is the order of the day.

Calgary is lucky in this respect on account of her long evenings, it really not getting dark until ten p.m., and dusk begins about nine; giving hours of daylight in the evenings for sports and general pleasures.

## The Opening Day.

On Thursday, the opening day, the morning will of course be given up to the arrival and welcoming of delegates and visitors, and such business as the executive committee desires to have rushed in preparation for the assembled convention. The afternoon will see the first assembly of delegates and the official welcome by the city officials, the appointing of committees and such general business, and in the evening after dinner, the delegates will be taken around in automobiles from 7 to 9 p.m., to see Calgary and the surrounding district.

After this the delegates will be at liberty to do as they please, as many of them will doubtless be glad to rest after their long train journey.

Friday, the second day, will be a business day distinctly, the convention assembling at 10 a.m. and 2 p.m. for regular discussion of business.

In the evening a competition of some kind will be arranged, and the members will have a chance to demonstrate their ability in sports (also their ability to accept defeat or victory as a sportsman should).

## A Trip to Banff.

On Saturday, the third day, the delegates will be entertained by the Calgary Association in a trip to Canada's greatest natural playground and park, Banff. A special train will leave Calgary at 10 a.m., when delegates will be at perfect liberty to do as they please for the rest of the day.

Sports may be arranged for those who desire to take part in them, but this form of entertainment will probably be left to the evening before the train leaves for Calgary again as many of the dele-

gates will wish to take advantage of the day to see all that they can of the numberless natural attractions of this most famous pleasure resort.

It is not necessary to go into detail as regards the things to be seen at Banff, so we will leave this for the delegates to discover for themselves, only saying that after the Friday evening sports, many of the delegates will be glad of the chance to limber up in the famous sulphur and hot baths with which Banff abounds. The members of the Calgary Association will be glad to act as guides at any time, in showing the visitors the beauties of the mountains and valleys surrounding the park.

The special train will return to Calgary Saturday night when all are ready, and it is a great regret of the Calgary Association that owing to the crowded condition of Banff at that season of the year, it is impossible to make the whole trip last over Sunday, as accommodation cannot be secured ahead for a large party. However, any delegates who can secure accommodation personally for over Sunday are not necessarily forced to return on the special.

Sunday, the 21st, will be given up to a day of rest, and as such no arrangements have been made for any events whatsoever for that day.

## Exhibition Day.

Monday, July 22nd, and the fourth day of the convention proper, will be manufacturers' and exhibition day from noon forward.

The convention will assemble at 10 a.m., but the afternoon is for exhibition purposes, when all the appliances exhibited by the different manufacturers will be demonstrated by the representatives present. It is also hoped that every delegate will attend with the intention of assisting in these demonstrations to the best of his ability, so that the public can see everything in working order under the hands of experts.

In the evening some form of entertainment will be arranged for and the delegates can be assured of a good time whatever is decided upon.

Tuesday, the convention assembles in the morning at 10 o'clock for business and continues up to the afternoon at 2 p.m., when sports are the order of the day. These sports will take the form of a distinctly western entertainment, inasmuch as bucking contests, roping and tying contests and other western exhibitions will take the leading place.

In addition to these of course there will be the regular contests such as races, tug-of-war, etc.

In the evening a baseball game will be the feature and probably some other form of competition in which the eastern delegates will have every opportunity to trim their western brethren.

## Will Hold Banquet.

Wednesday will be given up entirely to business and both morning and afternoon will see the delegates in attendance at the convention for the proper discussion of all the important matters that are to be taken up.

Wednesday evening will be banquet evening when the delegates will have the chance to greet any visitors and guests at a feast of reason and a flow of soul. Mr. Watson, our genial national secretary, will sing his now famous lyric, "The Cat Came Back."

On Thursday business will again be wholly on the programme, and this being the last day of the convention, a lot of work will be gotten through.

It is hoped that every delegate will endeavor to be on time for the different events, whether business or pleasure, and the Calgary Association hope to see as many present as can possibly arrange to come.

## A Big Exhibition.

In regard to the exhibition that is going to be held in connection with the convention, the Calgary members are very pleased at the ready response which greeted their invitation to exhibit sanitary or heating goods.

The building in which these exhibits and the convention itself will be held, is a large double building, two stories high; the front portion of which is sixty feet square, and the other part fifty by one hundred and ten.

The arrangement of exhibits will take up a floor space of about ten thousand square feet, and this space is now practically all allotted to the different manufacturers of our lines.

## Open to Public.

This exhibition will be open to the general public at all times during the course of the convention, and the representatives of manufacturers will be in attendance to demonstrate their goods to those interested.

In order to obtain the object desired, that of illustrating to the public the value of installing first-class goods, it is necessary first of all to secure the attendance of this public and a campaign of publicity is now under way in Calgary that will bring many people out to see the exhibition, that would otherwise never think of attending. Special invitations will be sent to the architects of the whole of Alberta to attend, the contractors of Calgary and the city fathers; while general invitations will be before the public in the daily papers all the time.

It is hoped by these means to arouse an interest in sanitation and modern methods of heating that has hitherto been conspicuous by its absence.

Another thing that the Calgary Association is doing to try and elevate the



standard of our craft, is to arrange for lectures or addresses to be made each day at the close of the regular convention business on questions relating to the lines which we specialize in.

#### Addresses Will Be Given.

Well-known authorities on certain subjects will attend and address the members and where possible it is thought that perhaps some great good might result if those who are most directly connected with us in the building lines, more particularly the architects, were also invited to hear these addresses and thereby learn exactly what is transpiring in the sanitary and heating world.

These addresses will probably be divided up to cover the points most required, and will be on the subjects of sanitation, its value to the community: Heating and ventilation and its kindred subjects:—Modern business methods as applied to our own line:—Education, technical and otherwise, and its value in a modern sanitary or heating business.

It is felt that addresses of this sort will open many eyes to the great advances that have taken place in our business and the chances there are for still greater advances.

#### As to Attendance.

In regard to the attendance. The Calgary Association would be pleased if all who intend coming to the convention would let them know, so that arrangements can be made to provide suitable accommodation.

There is no reason why this convention can not be made the banner one to date of all those that have taken place, and with the exhibition that is being held in connection with it, the addresses that will be heard, the rubbing up of wits by contact with your fellow craftsman; no member who is present can fail to be benefited, and will return home with a greater enthusiasm in his business, a clearer vision on all his problems, and a renewed snap and vigor in his outlook on life.

From the reports received, there is every indication of a large and enthusiastic turnout, but we must not let it rest at merely reports; what is wanted is actual attendance, decision on the part of the sanitary and heating engineers of Canada to take advantage of these opportunities that the conventions give, to meet your fellow craftsman, hear his views, and by co-operation with him, endeavor to elevate our craft to the plane that is its by right.

Come one, come all, and the Calgary Association will extend the heartiest welcome in its power to you, try to make your visit a pleasure, and endeavor to send you home with a larger outlook on things in general.

Don't forget the dates: July 18 to 25.

## Trap for Use in Automobile Garage

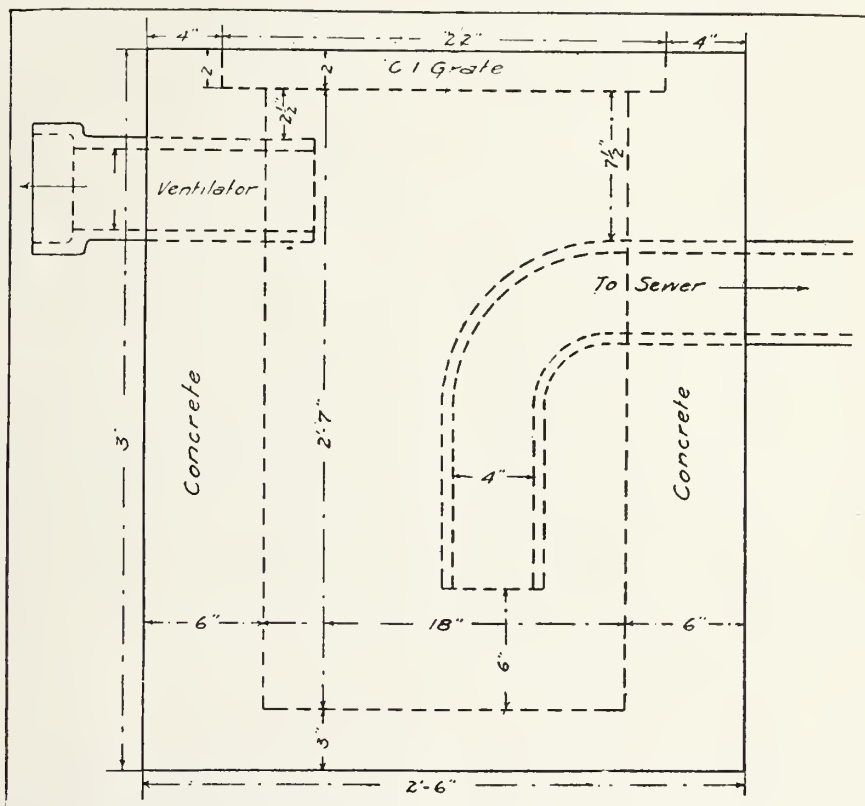
EDWARD Quinn, St. Louis, supervisor of plumbing, writes in the Plumbers' Trade Journal:

During the late years of my term of office as supervisor of plumbing my attention has been called to automobile garages and the heavy discharge of gasoline and oils into the sewers. After watching some laborers being driven out of the ditches while trying to make a sewer connection about 300 feet from a public garage, by the fumes of gasoline, it occurred to me that rather than have the lives of people endangered in and around our sewers, it would be a splendid idea to arrange a trap that would prohibit or at least hinder the passage of gasoline and oils into our sewers.

least prohibit a heavy percentage of gasoline from finding its way into our sewers, thereby greatly reducing the chances of accidents.

In a measure I think this causes greater care among employes of garages as they are aware that carelessness on their part will result in an explosion on their own premises and endanger their lives. Since we have adopted this rule in our city the owners are installing these traps in the garages already erected and in some cases the insurance companies have cancelled the insurance on machines stored in garages not equipped with this trap.

You will note that I have shown the dimensions on this particular trap, and



Plan of trap to stop passage of gasoline or oil into sewers.

The outcome or result of that idea is clearly shown in the accompanying drawing. You can readily see that by taking the outlet close to the bottom of the pit it will cause the gasoline and oils to rise to the top. By ventilating the pit with a 4-inch pipe direct through the roof and causing a draft, evaporation would take place quickly and keep these dangerous liquids out of the sewers. I took this design up with our Board of Public Improvements and with the assistance of the Fire Prevention Bureau, I had them adopt a rule enforcing the installation of one of these traps in each garage. By draining the entire floor area into them we can at

it is intended for private use only where there is but one or two machines. I would recommend that the trap be enlarged according to the number of machines stored.

Another instance that may be of interest is the fact that some eighteen months after one of our public garages burned to the ground one of our largest plumbers attempted to make a sewer connection about 500 feet distant. To all appearances the ground was in normal condition. After starting the excavation, the fumes of gasoline became so strong that the workmen had to leave their work and get out of the ditches.



# Permanent Secretary Appointed

G. F. Frankland Will Act in That Capacity—Certificates are Framed — Arrangements are Being Made for Party to Go to Calgary Convention—Toronto Society Running Excursion to Guelph on July 6.

**T**ORONTO, June 12.—The directors have been busy during the past two months carrying out the mandates of the Ontario Society and putting into effect the decisions reached at the Good Friday convention of that body.

The most important step taken has been the appointment of Garrett F. Frankland as permanent secretary or "registrar"—the title provided in the constitution for this office. This announcement will be received with the heartiest approbation for Mr. Frankland is undoubtedly the man for the position. He has held that post since the organization of the Ontario Society and the success achieved has been in no small degree due to his perseverance and initiative.

In taking the office he is undertaking a heavy amount of work with practically no remuneration. He will, of course, devote only a part of his time to association work, as the conducting of his own business will demand the bulk of his attention. A stenographer will be secured to assist him in handling the association correspondence. An appropriation of \$500 a year will be made, out of which Mr. Frankland will pay the stenographer. The headquarters will be in the offices of Read-Frankland, Ltd.

The satisfactory settlement of this question will be good news to the members of the society.

## Names of Committees.

Mr. Frankland is now proceeding with the work of the organization. He is anxious to receive from the chairman of the various committees the names of the men they have selected to act. He will then be able to get in touch with them. The chairman should attend to this matter without delay.

## Correspondence Solicited.

Mr. Frankland makes the following statement:

"I hope to be able from now on to keep up with all that comes any way from the members of our own society. There is a big need for all members to correspond frequently with the directors or the corresponding secretary, and I would ask you to notify them, through your columns that any person wishing information regarding our society can receive same by dropping me a line.

"I would also draw the members' attention to the fact that we have had

placed in the public press information with regard to the change in our name from plumber and steamfitter to sanitary and heating engineer. If this plan is followed by the craft throughout Canada, it will not be long before we come into our own as a recognized organization of experienced craftsmen."

The notice referred to was published in the Toronto newspapers, and has done much to acquaint the public with the change in name.

## Certificates Framed.

The certificates to be sent to each member have been framed and will be distributed at once. Some of the Toronto members have secured theirs, and have proudly hung them up in their shops. As one man remarked, "they certainly do make a splash."

## To Go in Body.

Secretary Frankland is endeavoring to get the names of all Ontario men who are intending to go to Calgary. His idea is that they should all go in a body. If a sufficient number were going along—and indications point that way—a special car could be secured. This would certainly enhance the pleasure of the trip.

It has been suggested that all the Eastern delegates go by boat to the Twin Cities. There they would meet

the Twin Cities delegation and the whole party would travel on to Calgary by special car or even by special train. The Montreal delegation have elected to take the boat trip already.

The idea is a good one, and all who intend to go should notify Mr. Frankland at once to that effect. He could then proceed to make the necessary arrangements.

Those who have already decided to make the trip are anxious to get more to go. In the first place, the bigger the attendance, the more successful the convention will be. In the second place, if 100 in all take in the convention, a half-fare rate will be secured. It seems reasonably assured that there will be easily that number of delegates alone, not counting the manufacturers' and wholesalers' representatives who will go.

It is expected that fully fifty will go from the Eastern provinces alone. The attendance from the West will be larger, of course.

## Toronto Delegates.

At the last meeting of the Toronto Association, delegates were appointed to attend the convention. Frank Maxwell and J. E. Fullerton were selected with Geo. Cooper and H. S. Pell as alternates.

(Concluded on Page 13.)



A view of Eighth Avenue, Calgary, one of the main business streets.



# Revised By-laws of Canadian Society

New Draft Which Will be Submitted to the Convention at Calgary—All Members Should Look Them Over Carefully and be Prepared to Discuss Them.

THE By-laws of the Canadian Society of Domestic Sanitary and Heating Engineers as revised by the officers for submission to the convention at Calgary are as follows:

1. The president shall be the chief executive officer, who shall preside at all the meetings of both the association and executive committee; he shall have the power—subject to the approval of the executive committee—to remove from office any officer who fails to perform his duty, and appoint his successor in the same manner. He shall appoint a sergeant-at-arms when in convention. The vice-president shall have the same duties and authority in his absence.

2. The secretary-treasurer shall keep the accounts of the association, receive all monies paid to the association, and on order of the executive committee disburse the same when necessary. He shall deposit all funds in some chartered bank, and pay out all funds by cheque. He shall keep a record of the proceedings of the association; shall notify members of the committees of their appointment or election, keep a roll of the members, and issue notices of all meetings of the association. At the annual meeting of the association he shall, in writing, make a full report of all monies received and disbursed, and bring his original books to the convention; his accounts and books shall at all times be open to the inspection of any member of the executive committee, and to each one he shall make quarterly reports in writing of the moneys received and disbursed. He shall give a bond for the faithful discharge of his duties to a sum not less than two thousand dollars (\$2,000.00), and the surety shall be paid out of the Canadian Society treasury. He may secure the services of an assistant paid secretary with the approval of the executive committee.

3. The executive committee shall, subject to the instruction of the association, control and manage its business and the appropriation of funds, and make contracts and purchases, for the association; may when necessary employ a clerk for said committee, but shall have no power to make the association liable for any debts to an amount which shall exceed the amount of cash in the hands of the secretary-treasurer, and not otherwise appropriated without the express authority of the association, for the better execution of their powers they may appoint from their members,

or from local association, such committees as occasion may require and to them may seem proper for carrying out the object of the association, and shall have power to fill vacancies.

4. There shall be an auditing committee consisting of three delegates from the convention, who shall audit all bills and accounts of the secretary-treasurer.

5. The provincial vice-presidents shall consist of one from each province represented in the Canadian Society of Domestic Sanitary and Heating Engineers, and shall have power to organize local associations in their respective provinces, and look after local and provincial affairs; each shall be recommended by his provincial delegation or delegations at the annual meeting of the Canadian Society of Domestic Sanitary and Heating Engineers.

6. He shall have the power with the consent of the executive committee, if in their wisdom they think it advisable and consistent with the principles of the constitution and by-laws to call a provincial convention.

7. The sergeant-at-arms shall be appointed by the president, and shall guard the door and see that none pass or repass except they be members of the Canadian Society in good standing in the society and duly elected to the convention. He shall carry all messages from the president to any of the officers.

8. The credential committee shall consist of the secretary-treasurer and two other members appointed at the last meeting of the executive committee. They shall examine the credentials of the members and report in writing to the convention at the earliest possible moment after receiving the credentials of all members.

9. The sanitary committee shall be composed of five members, and shall have charge of all sanitary matters appertaining to the trade.

10. The heating and ventilation committee shall be composed of five members, and shall have charge of all matters appertaining to heating and ventilation.

11. The legislative committee shall consist of five members, and shall have charge of all matters legal and legislative.

12. The apprenticeship committee shall consist of five members, and shall have charge of all matters relation to apprentices.

13. The essay committee shall consist of five members, whose duty it shall be to select subjects, prepare papers to be read and discussed at the different local, provincial and Canadian Society meetings.

14. The chairman of those committees shall be elected at the annual meeting, and the remainder be appointed by the chairman of said committee.

15. The neglect of any member of a committee to attend three consecutive meetings may be deemed a resignation unless a satisfactory explanation of such absence shall be given to the committee; all committees shall have the power to fill vacancies.

Clause 15 (a)—Any member of the society, not being in arrears, may retire therefrom, and shall cease to be such member by giving notice on the forms required by the by-law, and thereafter shall be wholly free from liability for any debt or engagement.

Clause 15 (b)—Every member expelled or voluntarily retiring from the society or whose name shall be struck off the list of members for any reason mentioned in the constitution and by-laws shall forfeit the right of membership and return to the society certificate or certificates and all or any properties of this society that may be in his possession.

16. The officers and chairman of committees shall report in writing at the annual meeting of the society, all books, documents and reports of officers, and reports of chairman of committees shall be the property of this society.

17. Any officer of this society may also be removed from office, for cause, by a two-thirds vote at the annual or special meeting, and an election to fill the vacancy to take place at the same meeting.

18. All amendments to the by-laws shall be proposed in writing, and a two-third majority shall be required for their adoption.

Nothing in article 18 shall prevent a change in the by-laws, provided the same is carried by a two-thirds vote of the members at a regular session.

19. The place of meeting of the annual convention and the date of meeting to be the 2nd week of June in every year. Every local and provincial shall appoint their delegates three months in advance of the annual meeting.

## RULES OF ORDER.

The president or the presiding officer, shall call the meeting to order, direct the officers to take their respective chairs,



appoint sergeant-at-arms, fill all vacancies pro tem, and declare the Canadian Society of Domestic Sanitary and Heating Engineers open for the transaction of business, and will call for the report of the credential committee.

(1) Every member when he speaks or offers a motion, shall rise and respectfully address the chair, and state his name and the local and provincial he represents. While speaking he shall confine himself to the question under debate, and avoid all personalities or indecorous language. Should two or more members rise to speak at the same time, the chair shall decide which shall be entitled to the floor.

If a member while speaking, should be called to order, at the request of the chair, he shall cease speaking, and take his seat until the point of order is determined, when if permitted he may again proceed. No member shall speak more than once on the same question until all the members wishing to speak shall have had an opportunity to do so, nor then twice without permission of the chair. No motion shall be subject to discussion until seconded and stated by the chair and any motion may be called to be given in writing.

Any member making a charge against a member of this society, or other person or firm, must do so by written statement, giving the facts of the case, and any proofs he may have in his possession.

#### Order of Business.

1. Appointment of sergeant-at-arms.
2. Report of credential committee, and action thereon.
3. Roll call and reading of minutes, nomination of officers, etc.
4. Appointment of special committees.
5. Reading of communications, resolutions and amendments.
6. Reports of retiring officers.
7. Reports of standing committees.
8. Reports of select committees—and action thereon.
9. Select place for next annual meeting—second day.
10. New business.
11. Unfinished business.
12. Election of officers, on last day of meeting.
13. Election of chairman of standing committees, and installing of officers on last day.
14. Adjournment.

#### Constitutional Guide for Provincial Association.

1. Each provincial association when organized shall be affiliated with the Canadian Society and a certificate to be issued by authority of the Canadian Society of Domestic Sanitary and Heating Engineers.

2. The election of officers shall be left to the provincial association.

3. The officers of the provincial association shall make annual reports to the Canadian Society.

4. When the membership in any province of the Dominion of Canada is composed of three local associations in good standing, a provincial society for the management of such part of the Dominion may be formed subject to the following conditions:—

The consent and desire of any three local associations within the part of the Dominion for which the provincial is sought, must be had and certified to over the signature of the president and secretary, and attested to by each local.

5. When the consent and desire of such locals, as stated in the next preceding section, certified as above, has been received by the Canadian Society, they shall proceed to issue a charter for the formation thereof, and call a meeting of the duly appointed representatives of the locals within the province for which the provincial is proposed to be established, by giving at least thirty days notice to such locals of such meeting.

6. Such meeting shall be called at some convenient place within the pro-

vince of the proposed provincial society.

7. When such meeting is convened, it shall be presided over by the provincial vice-president, or some person appointed by the Canadian Society, and if the representatives of the three local associations from said province are still desirous of forming a provincial, and so declare by vote of the representatives present, the representatives present may proceed to organize such provincial by electing the officers thereof, and the resolution so passed at such meeting shall be the authority of the Canadian Society to issue the charter.

8. Immediately after the installation of the officers of any such provincial who have complied with all the requirements of the Canadian Society, then the local associations within its jurisdiction shall be notified by the Canadian Society of such fact, after which it shall be the duty of such locals to render due obedience to all lawful commands and orders of the said provincial society.

The same rules shall govern the local associations, and they are to be composed of firms—and not individual members of firms.

## Declare War on Sub Contract System

**Montreal Master Plumbers Inform Architects That They Will Submit to This no Longer—Approve of the Protection Given by the Heating Houses, and Urged the Supply Houses to Fall in Line.**

Montreal, June 14.—The Montreal local association is doing things. All through the year questions of vital importance have been brought up at the meetings, but perhaps Wednesday of this week saw the most serious business of all. To begin with the hundred dollars promised was voted to the Canadian society, in addition to the association's regular per capita tax. But this was only a preliminary. The business of greatest importance came up in a discussion of letters which Secretary John Watson, of the National, had sent to the heating and supply houses and to the architects.

Something has been said about these letters before, and many will remember that the heating and supply houses were asked to protect the dealers; and that the architects were asked to have separate contract forms issued for heating and plumbing work. To state briefly what was done at the meeting of Wednesday would be merely to say that these letters were approved. But there was more than that. The justice of the requests was discussed, and it was determined to go a little further, the secretary being instructed to advise the ar-

chitects of the city that the members of the Montreal Master Plumbers' Association would not take any sub-contracts for heating or plumbing work.

#### A Serious Decision.

That is a pretty serious step. It means that the architects must adopt a different policy from that which they have been following, or else they will be unable to count upon the assistance of many of the best sanitary and heating engineers in the city. The contractors, who have been getting the whole work upon a building, and who have been letting sub-contracts for the heating and plumbing work, will also find themselves in a bad position. The step, indeed, means that the architect will be forced to see that the request for a separate contract for heating and for plumbing work is one which the master plumbers of the city are determined to have granted.

At the meeting there was a good deal said about the evil of the sub-contract system, to which the sanitary engineers have been submitting for some time. To begin with, this prevents the man for whom the house is being built, and the sanitary engineer getting together.



All requests and complaints have to be made through the intermediary of the general contractor. One instance will show how this has often worked.

#### A Sample Case.

A well known plumber took a sub-contract. The class of goods was not clearly laid down in the specifications, and great trouble was experienced in deciding upon these. Finally the general contractor arranged that the owner of the house and the sub-contractor should go to the supply house and pick out what was to be used. The general contractor first instructed the sub-contractor, however, to add fifteen per cent. to his charge, for his—the general contractor's—profit on the plumbing work.

#### The Question of Rake-off.

Well, the house owner and the sub-contractor went to the supply house. The desired goods were picked out, then the price was estimated. The cost price, a twenty-five per cent. profit for the sub-contractor, and a fifteen per cent. profit—or rake-off—for the general contractor, were added together. The total surprised the houseowner, who decided not to take them.

The upshot of this affair was that the general contractor and the householder determined upon a poor grade of goods, which the sub-contractor of necessity installed. He knew the result would not be satisfactory, and indeed within a year much of the ware had to be changed.

This is but one case. Many were mentioned by members of the Montreal association before and after their meeting of Wednesday, and they determined to let the architects know that they will no longer submit to the system of sub-contracting. It is not, they declare, fair to the householder or to the master plumber. It is not fair to the householder because he has to pay more for his work, and because he often finds he is given an inferior kind of equipment, as instanced above. It is not fair to the master plumber, because, if he is forced to put in inferior material, he is judged by the inferior work which must necessarily result.

#### Approve of This Action.

The question of protection from the heating and supply houses was also taken up at this meeting. Here a part of the desired result has already been secured, the local heating houses having given the dealers a fair protection. This they have done by establishing two prices. One which they quote buyers who come to the warehouses—another, and a considerably lower price, which they quote the dealer, a price which enables him to sell at the same price as the heating houses sell to small buyers, and still to make a fair profit.

It was determined to let the supply houses know what the heating houses are doing in this regard, and the impression is that they will speedily fall in line.

many ways, and probably would please a great number at the convention. But there is one clause in this form which is considered by some too severe. It deals with the ownership of a system which has been installed, but which is as yet not fully paid for.

In such a case, sets forth this contract form, the heating system is the property of the contractor, and may be taken back by him at any time that payments are not made. It further states that the plumber or contractor may, if necessary, break down doors and locks in order to get the heating system back, that in case of such action being necessary he shall not be liable for damages, and that any payments which have been made are to be kept by him, these being considered as rent for the appliance.

#### PERMANENT SECRETARY APPOINTED.

(Concluded from page 10)

In addition to the association delegates, Toronto will have quite a number of representatives on hand. Lewis Legrow, Wm. Mansell and G. F. Frankland are going for sure, and it is likely that J. Aggett, R. S. Shannon and A. F. Passmore may go. Others state that they are thinking of making the trip. There will be a large number from provincial points. Harry Mahoney, of Guelph and J. E. Farrell, of North Bay, will be there, of course. J. A. Caslake, of Collingwood, and H. J. Peter, of Stratford, have announced that they will be going if their present plans carry. There will be more heard from before the date of departure.

#### Excursion to Guelph.

The Toronto Society of Sanitary and Heating Engineers are running an excursion to Guelph on July 6, and an invitation is extended to all members of the trade in any part of the country, whether members of the Ontario society or not, to go along. The party will leave on the C. P. R., which will take them direct to Riverside Park. Arrangements have been made to have a caterer on the grounds, and all meals will be served there. A splendid day's programme is being arranged. Anyone outside of Toronto desiring to go should communicate either with Mr. Frankland or J. E. Fullerton, the secretary of the Toronto association.

#### Firm Name Changed.

Cardston.—F. Summerton has changed the name of his establishment to the Aeme Plumbing and Heating Co. The premises have been further enriched by the application of a fresh coat of paint.

## National Officers Preparing for Big Event

Will go to Calgary in a Body — Secretary Watson is Now Arranging the Itinerary—Eastern Delegation Will go by Boat on Great Lakes—Heating Forms Are Under Consideration.

MONTREAL, June 14.—A little less than a month now and the cry will be, "All aboard for Calgary," for on July 13 the Sanitary and Heating Engineers from the eastern part of Canada are going aboard the boat at Owen Sound. The hope is that all will travel by the same ship.

Secretary John Watson, who has been working with might and main to make all the arrangements, is trying to prepare some kind of an itinerary, so that the members of the Society may travel together just as much as possible. He has experienced a good deal of trouble getting the desired information from the railways, and is unable as yet to announce just when the representatives should leave their various starting points. However, it has been arranged that they will leave Owen Sound on the thirteenth, so that all may meet there if not before.

It will be a merry crew on that boat. The Port Arthur and Fort William dele-

gation will be reminded of last year, just as soon as they see the ship arrive.

Present intentions are that the Executive will hold their opening meeting on July 18, and that the first open session will come the following day. There may be some changes in these plans, but as nearly as possible they will be followed.

As yet it is a little early for the officers to announce the exact programme. Already, though, it is evident that the report of the committee appointed to look into the question of drawing up a contract blank for installing heating systems will cause some interesting discussion. It is very evident that there should be some form used in all parts of the Dominion. To assure this is the aim of the committee, but the task is a difficult one.

#### Question of Ownership.

A suggested form has come to the Secretary from a private member of the society. This meets the requirements in



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TORONTO, JUNE 15, 1912

IT IS quite apparent, from the report published elsewhere in this issue, that the Calgary society are preparing to make the national convention held there from July 18 to 25 a red letter event in every respect. They have

planned a programme which promises not only to afford the delegates a good time, but to make the business sessions eminently successful. Their draft of events for the week leaves ample time for the carrying out of the business of the association properly.

A distinct feature of the convention will be the manufacturers' exhibit. It is reported that already nearly all the spaces have been sold. This insures an exhibition of distinct educational value, and it will add appreciably to the interest of the convention.

THE Heating and Ventilating Magazine remarks, editorially: When the National Association of Master Plumbers and Steamfitters of Canada changed its title last year to the Canadian Society of Sanitary and Heating Engineers, we expressed the opinion

while the proposed change was under discussion, that such a move was likely to introduce an entirely unnecessary confusion in the commonly accepted definition of the term, "heating engineer." This organization now proposes a further change in its title to that of the Canadian Society of Domestic Sanitary and Heating Engineers. The insertion of the word "Domestic" seems to us to be a very happy solution to the question; it would be even more so if the title could read "Canadian Society of Domestic Heating and Sanitary Engineers." Such a title would accurately define the class of work done by most men who are both heating and plumbing contractors, and at the same time would be dignified, as befits the growing importance of these two industries.

STILL there are many who lament that the former days were better than these. But from time to time there comes an exposure which causes people to start. Some condition is revealed which seems shocking, but

which yet brings the thought that things are improving — that the world is a better place to live in than it was twenty or fifty years

ago. John Gordon, of Montreal, has just made a discovery which illustrates very well one of the respects in which progress has been made. He was doing some work upon a Bleury Street store. When overseeing this one day

he detected an odor. He found that there had been sickness among the employes of a clothing concern which had rooms just above the flat in which he was working. Mr. Gordon therefore made a careful examination, and underneath the floor he discovered a cesspool. The refuse from all the closets used by those employed above emptied into that.

A horrible state of affairs—one which threatened the health of many. But it has one bright side. This case is the exception now. Its discovery seems horrible. A few years ago—oh, a very few—such things were common. Cesspools were the skeleton in the closet in many a home and many a factory. There is still room for improvement, but those connected with sanitation may justly feel pride in the strides which have been made along these lines. Much has been done to make the cities healthier—better places in which to dwell and work.

WITH TALK of scarcity in many manufactured products already being heard, it is not good to discover that the transportation difficulties are yet far from being relieved. Indeed, the manager of one enamelware concern lays the entire blame for the

present shortage upon the carrying companies. "There is no real shortage of enamelware yet," says this man. "The appearance of a shortage is given, that is, all buyers are not getting prompt delivery, not because we are not shipping the goods promptly, but because they are not being promptly delivered."

Instances aplenty of slow shipment might be quoted. A shipment takes two weeks, exactly, to reach Montreal from London, Ontario. Goods loaded at Ontario points reach Ottawa 15 days later—the trip is actually one which would take a night. Goods were shipped to Montreal from Ottawa a fortnight ago. They have arrived, and upon inquiry, those to whom they were sent have found that it took the shipment three days instead of three hours to come from the Capital to the Royal City, and that it took seven days to get them from the Montreal freight yard to their destination in the city.

This transportation problem is one of moment. Conditions will undoubtedly become more grave before fall. What is to be done is a question which may not easily be answered, but it would appear that this is a question which might well be taken up at the various conventions—a question which might be discussed by retailers and manufacturers together.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

"Getting down to fundamental principles, it is at once apparent that the rapid and unprecedented advance of civilization has wrought wondrous changes in the multifarious fabric of society, leading to uplift and development of all trades, particularly that of the sanitary and heating engineer. From the primary position of a worker in lead, the sanitarian has come to the stage where he must combine a scientific knowledge and insight with practical experience, when he must know hydrostatics, mathematics and physics, as well as having some insight into the mysteries of medical science."

When you come across a passage like that in a report read at a meeting of sanitary and heating engineers, it can be taken for granted that the writer is E. Lewis Legrow, of Toronto, president of the Ontario Society. "Lew" has the gift of words, either in the way of stringing them together on paper or voicing them from the platform. Further than that he believes with all the depth of his conviction in the importance and the future of the trade and is ready to give his reasons on any occasion. As a result, he has become known as a booster of the sanitary and heating trades. It would be a splendid thing if there were more like him.

Lewis Legrow is a bookish chap. The irreverent might even term him a "high-brow." He can lead you through a discussion on the differential calculus, branch on to an exposition of the fallacies of the theory of evolution, dissect Malthus, critically analyze Ibsen and Maeterlinck, argue out the whys and wherefores of political economy and end up with some thoughts on Renaissance architecture. When he was an apprentice, so the story runs, he could wipe a joint to suit the most critical of bosses and ponder the philosophy of Epictetus at the same time. He has been steadily progressing ever since and has taken a course in political economy.

When you get a man who can dabble in the abstruse and vigorously manage a paying business at the same time, who is workish as well as bookish, you have a winner. And that's Lew Legrow. He banishes Herodotus and Copernicus from his mind when he reaches the office and settles down to figuring contracts, checking up accounts and boosting the business of Lewis Legrow generally. Get him at a committee or in meeting and he is a quick thinker and typically the man of action. If he is in the chair, things go with a swing. Business is not allowed to drag. If anything is left for him to look after, it can be taken



When you get a man who can dabble in the abstruse and vigorously manage a paying business at the same time, who is workish as well as bookish, you have a winner. And that's Lew Legrow.

for granted that it will be looked after, promptly and well. The fact of the matter is that he goes into everything wholeheartedly. He gives to the handling of his 42-foot sloop-ridge yacht the same concentration and attention that he does to the handling of his business.

He is a busy man. In addition to his business, his duties as president of the Ontario society, and the time that he gives to study, he has numerous other interests. He is a member of the Queen City Yacht Club and an automobile owner. It would add to the interest of this sketch if we were to state that he was a regular ring-tailed scorer but candor compels us to state that as a driver he is conservative. Lew has too deep a respect for the law to exceed the legal if somewhat prosaic speed limit. All his speeding is done when he has donned the white ducks and jersey which no self-respecting yachtsman would be without and is running his good ship in a neck of wind—or whatever the correct nautical phraseology may be.

Last, but certainly not least, Lew is an active church member. His earnest belief and the zeal that he displays in the services of the church are typical of the man.

## A Few Facts.

The subject of this sketch adds modesty to his other virtues, so it is hard to get any facts out of him. Asked as to the date of his birth, he is apt to assert that, like Topsy, he "just grew up."

The biographer has it on good authority, however, that the growing process started about the year 1875 in a peaceful hamlet on the wind-swept coast of Newfoundland and continued with some rapidity and more perseverance than is usual with most, so that to-day the subject of our sketch stands well above the height vouchsafed the average man. In 1886 he came to Toronto, and has stuck to the City of Upright Morals ever since, more or less. He began to learn his trade with W. H. Hewlett, finished off in a number of other shops and then went to Buffalo for a post graduate course. Returning to Toronto some fifteen years ago, he went into business for himself. His business career has been attended with a wide measure of success, as Bradstreets bears witness. He has been a business man as well as a plumber, which is the secret of it all.

## An Association Man.

Lew has been a firm believer in association work. He has been president of the Toronto society and secretary of the old Ontario body. A few years ago, he accompanied Geo. Cooper to Montreal to a national convention and was called upon for a few words. Now, Lew is what might be termed "a born talker," and he simply couldn't help improving the occasion. He talked not wisely but too well for on the conclusion of his address, they promptly made him vice-president for Ontario, and his troubles began. Toronto secured the next convention and George Cooper was elevated to the presidency, Lew Legrow being made secretary. The work he had been called upon to do as vice-president was just about trebled then. However, he made a capable secretary and much good work was done that year. He is now president of the Ontario society and is starting his second term.

Lewis Legrow is a young man with a big future. He has wide interests, wide sympathies and a wide circle of friends.

## Men Went Out.

Port Arthur.—The journeymen plumbers want more money and went out on strike this morning. They are asking for 60 cents an hour, whereas their present rate of wages is 50 cents an hour. This the master plumbers do not see their way clear to granting.

Saturday the plumbers and master plumbers met in the plumbers' hall in the McCutcheon Block, Cumberland street, but did not come to any agreement.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## PIPE SIZES AND INDIRECTS.

Editor Plumber and Steamfitter.—I have a job to fix over where a line of indirects do not give satisfaction. I am sure the pipe arrangement is not right. They are all connected on one line. Can you give me any information?

“Pipe Sizes.”

If the main line is of sufficient capacity there should be no trouble provided the indirects are not too near the water line. As a general thing, we prefer to see an ample sized main and each indirect taken off separately and not over 100 feet in each indirect. It is not always possible to have the indirects of that size and the thing to do is to see that the steam supply pipes are of ample size, the radiator well dripped and a safe automatic valve used.—D. C. H.

## HOT WATER FAILS TO RUN.

Editor Plumber and Steamfitter.—I am sending you a drawing (Fig. 1) showing you an outfit that is shy on hot

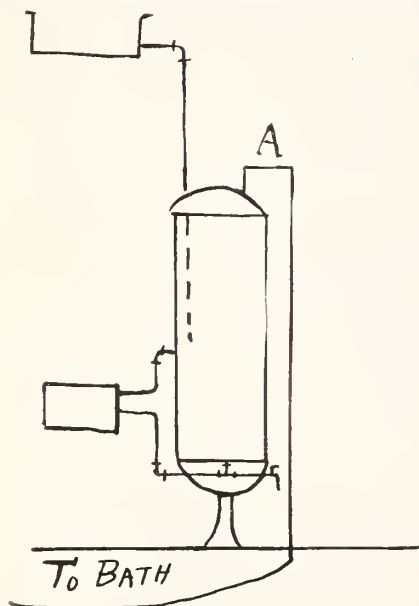


Fig. 1.

water. It sometimes runs and then again does not. Can you suggest a remedy

C. H. Hamilton.

Probably, being a tank pressure job only, it gets air bound at point “A.”

If a line to some of the fixtures above could be taken off at that point, the job might work all right. Otherwise an air valve at point “A” might fix things all right.—D. C. H.

## SANITARY. “YES IT IS?”

Editor Plumber and Steamfitter.—I came across a job the other day a rough sketch (Fig. 2) of which I send

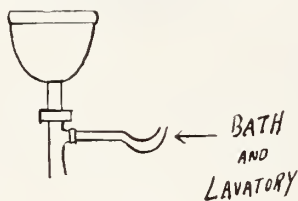


Fig. 2.

you. What do you think of it for a lay out?

L. V. B.

The less said the better. If any apprentice ten days in the shop couldn’t plan a better lay out he should be fired. Its work like this that continually gives the plumber a bad name in the community.—D.C.H.

## WANTS TO KNOW ABOUT HIGH WATER PRESSURE.

Editor Plumber and Steamfitter.—I have been asked to explain why the rapid circulating hot water was any better than the open tank system. I was rather up against it and couldn’t find any books handy. Will you be kind enough to explain it in the paper?

A. H. Maloney.

We believe that it is claimed by those who favor the pressure hot water system that a smaller quantity of water takes up the heat quicker and that it circulates quicker than in the larger piped gravity apparatus. Then again, the saving in using the smaller sized pipes and fittings is considerable which also applies to the labor as it is easier to instal the smaller pipes than the larger ones.—D.C.H.

## NOISY PLUMBING PIPES.

Editor Plumber and Steamfitter.—There is quite a racket on a plumbing job I have got to fix. I have been all over the job and can’t seem to find the

cause. May be you could make some suggestions in an early number of the paper which I shall look for with interest.

.. J. C. Johnson.

There are several causes the result of which is “noisy pipes.” One is that the water pressure is too heavy. Either make a tank pressure of the job or use a pressure regulator. Another cause is too small pipe or pipe that has not been reamed. Increase sizes and ream the pipe. Again loose washers may be the cause. Systems that are not air chambered or pipes that are firmly anchored directly to the beams may also give trouble. Use pieces of rubber between the pipes and the wood and put on the air chamber.—D.C.H.

## A GOOD CEMENT.

I have some stone laundry tubs that are cracked and wish you would tell me how to make some cement that would stop up the cracks and be sure to hold.

D. J. E.

You can easily make a cement of litharge and glycerine. Put the litharge into a cup and pour enough glycerine on it to make a stiff paste which force into the cracks with a putty knife. Use rather quickly before it sets. This should hold all right.—D.C.H.

## RANGE BOILER DOES NOT HEAT.

Editor Plumber and Steamfitter.—A range boiler I have on a job does not

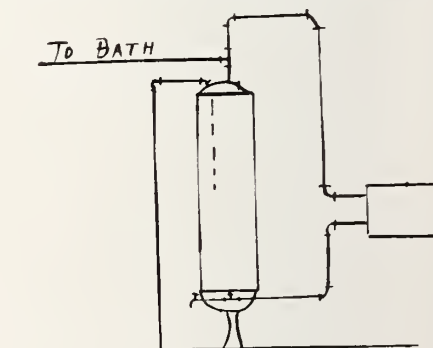


Fig. 3.

heat. I send you a drawing (Fig. 3) and wish you’d tell me how to fix it so that it will heat.

John Adams.

The drawing the correspondent sends in is shown in Fig. 3. If he will change his connections to the usual method (as shown in Fig. 4) we believe that he will have no further difficulty. Be sure and use at least  $\frac{3}{4}$  in. pipe and see that it is reamed and no traps are on the job.—D. C. H.

#### WHERE TO PLACE THE TANK.

Editor Plumber and Steamfitter.—In figuring an air-pressure system of waterworks for a customer he insists that the tank be buried in the yard. I

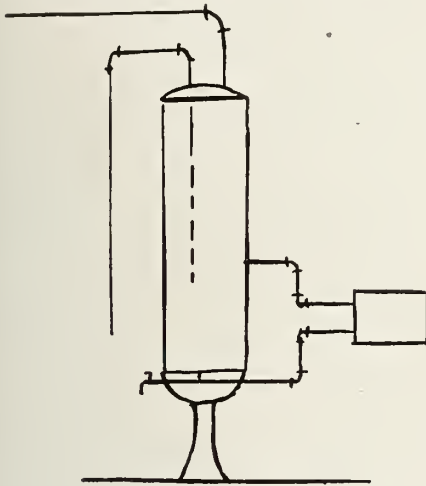


Fig. 4.

do not favor the plan and write asking you what is the usual way of placing the tank? Reader.

If the climate will permit there would be no objection to placing the tank in the yard. We have known of it being so located in many instances. However, in many other jobs the tank is placed in the basement thus affording a much easier means of access and also a sure protection against the frost. If buried and in a cold climate ample precaution should be taken against the tank's freezing.—D.C.H.

#### RULE IN COIL BUILDING.

Editor Plumber and Steamfitter.—In making up a coil is there any relative proportion between the upright and the vertical parts, or is it just merely guess work? Fitter.

The practice generally followed is to make the upright part not less than one-twentieth the length of the horizontal length of the coil. In very long coils in low buildings this is not always possible and provision will have to be made for the expansion by some of the regular means usually followed, such as swings or regular expansion joints.—D.C.H.

#### WHY DON'T THE DIES CUT GOOD ON BRASS.

Editor Plumber and Steamfitter.—I notice that when I cut a thread on brass pipe that I get too deep a thread

and one that leaks nearly every time. Why is this and how can it be cured? Inquiry.

It is said that the rake is not the same for the brass that it is for the iron, though pipe sizes be the same. The way to fix it is to grind the dies so that they will not tear the pipe. Many plumbers keep one set of dies so ground especially for brass pipe work.—D.C.H.

### Annual Meeting of Institute

Gloucester, England. — The annual meeting of the Institute of Plumbers was held on May 15 at the Guildhall, J. P. Cox, J.P., president, occupying the chair.

The report of the secretary stated that during the past year meetings had been held at Altrincham, Carlisle, Glasgow, Huddersfield, Mansfield, Scarborough, Southport, and Wakefield, which in nearly every instance resulted in the enrolment of additional members. The position at Glasgow was of special interest to the members of the institute. Owing to the geographical situation of the city and the fact that the local association contained all the principal plumbers, the district already enjoyed many privileges for which the institute was striving and which could only be secured by strong combination. The council hoped that some scheme for federating the Glasgow and West of Scotland district with the institute would be devised.

#### Plumbers' Registration in New Zealand.

The Government of New Zealand during the year had under consideration a Bill introduced by the Minister of Public Health for the registration of plumbers. It was proposed to make the Inspector-General of Schools Registrar, and it was further provided that all sanitary plumbing work should be done by or under the immediate superintendence of a person registered under the Act. Registration was to be granted to master plumbers in actual business at the passing of the Act, to fully competent journeymen, and to holders of a certificate of the City and Guilds of London Institute or some other certificate approved by the registrar. Petition had been submitted to the Registrar in New Zealand asking for the recognition of the Institute's certificate as a qualification for admission to the register.

A prize competition confined to members of the Institute had been organized, three prizes being offered, and Professor

Radcliffe, of Manchester, would be the adjudicator. The Institute had provided prizes to the value of £10 for competition by students attending any evening class registered by the City and Guilds of London Institute who passed the examination in plumbers' work and had made the greatest number of attendances at a registered class during the preceding session. Representatives of the institute continued to attend the meetings of the advisory committee of the City and Guilds of London Institute. Disappointment, however, was expressed at the results obtained, and it was suggested that measures should be taken to ensure something like uniformity of teaching in the classes. A sub-committee was appointed to draw up some standard suggestions.

#### A RIGID ENFORCEMENT.

St. John, N.B., June 8.—The rigid enforcement of some sections of their regulations by the local board of health has met with general satisfaction from amongst the plumbers in this city, and one of the benefits derived by them from the ordinance is that they have their hooks well filled with orders for several weeks in advance. The section of the act referring to the installation of modern plumbing in the premises of householders is the one in question, and the board are determined that every house will be equipped if it is at all possible and the old-time fixtures abandoned. This has meant a heavy demand for patent closets and a sequel is the busy season now experienced by the plumbers. It is estimated that about 400 patent closets will be installed in St. John this year, and accompanying them will be a large number of set tubs, all of which spells prosperity and increased trade.

The plumbers in Fredericton have formed a union of journeymen, and one of their first moves has been to demand a \$3 a day rate. They have gone on strike to obtain it, and several contracts are held up on account of their action. They have been on strike now for several days. Practically all the journeymen plumbers of the city are members of the union, and they have elected officers as follows: — President, Arthur Betts; vice-president, John Mahoney; financial secretary, Frederick Shea; recording secretary, Wm. O'Donnell, and treasurer, Wm. McGoldrick.

#### Form Partnership.

Dauphin, Man.—Messrs. Hyland & R. J. Lunn have entered into partnership under the firm name of Hyland & Lunn, and will carry on business in the plumbing, steam and hot water heating lines.



# Methods of Sewage Disposal

By Chas. W. Chandler.

From a recent statement made by the Provincial Health Officer for Ontario, it is evident that the authorities of this province intend enforcing the provisions of the act respecting the discharge of crude domestic sewage into lakes, rivers and streams. That the department means business is indicated by the fact that posters containing the section of the act dealing with this matter are now being sent to all summer resort districts, as well as to other points interested. The legislation giving power to prosecute persons violating this act only came into force last year. It was necessary that time should be given to enable the people to become acquainted with the regulations passed, and no prosecutions were instituted. The situation is different this summer, and the first case reported of the regulations having been violated will be followed by prosecution.

This will involve the necessity of subjecting all sewage from hotels, residences, etc., in these districts to a preliminary treatment whereby only a purified effluent is allowed to be discharged. The writer, therefore, proposes to deal with the problem of sewage disposal for a

hotel located near the shore of an inland lake, there being a good slope from the site of the hotel to the lake shore. In this case the sewage effluent must obviously be above suspicion, and requires a higher degree of purification, in view of the possibility of a water supply being taken from the lake. The water in the lake and the shores must also be kept pure and undefiled, in order not to prevent the use of the lake for bathing, boating or fishing purposes; any sewage nuisance must be absolutely prevented. It is also desirable that the sewage disposal plant be out of sight or made as inconspicuous as possible. This problem cannot be solved by using only a septic tank and discharging the effluent directly into the lake. Nor can such effluent be sufficiently purified by merely running it through an underground trench filled with broken stone and covered over at the top. Some further system of purification is absolutely required.

In this case we first provide preliminary treatment and liquefaction of a part of the suspended matter in a septic tank, with a capacity of 9,000

U.S. gallons, which may be built as shown in Fig. 1, which sufficiently explains the construction. Provision is made by shear gates for the occasional emptying and removal of the sewage accumulating in same. The tank may be covered in the simplest manner with 2-inch wooden planking. The effluent passes out through the outlet pipe, and is now in condition for more complete purification by oxidation and intrification in one of the several ways. It may, for instance, be purified by land treatment, preferably by sub-surface disposal, provided sufficient land is available, or by using contact filter beds. To effect this, the effluent is collected in a liquid sewage tank, as shown in Fig. 2.

This is a brick tank, circular in shape and arched over with a working capacity equal to 6,000 U.S. gallons. The top of the tank is provided with a man-hole with iron frame and cover. In order to reach several sections of the disposal field, which should be used alternately, the tank is provided at the bottom with two outlets, each operated by means of a gate valve opened and closed

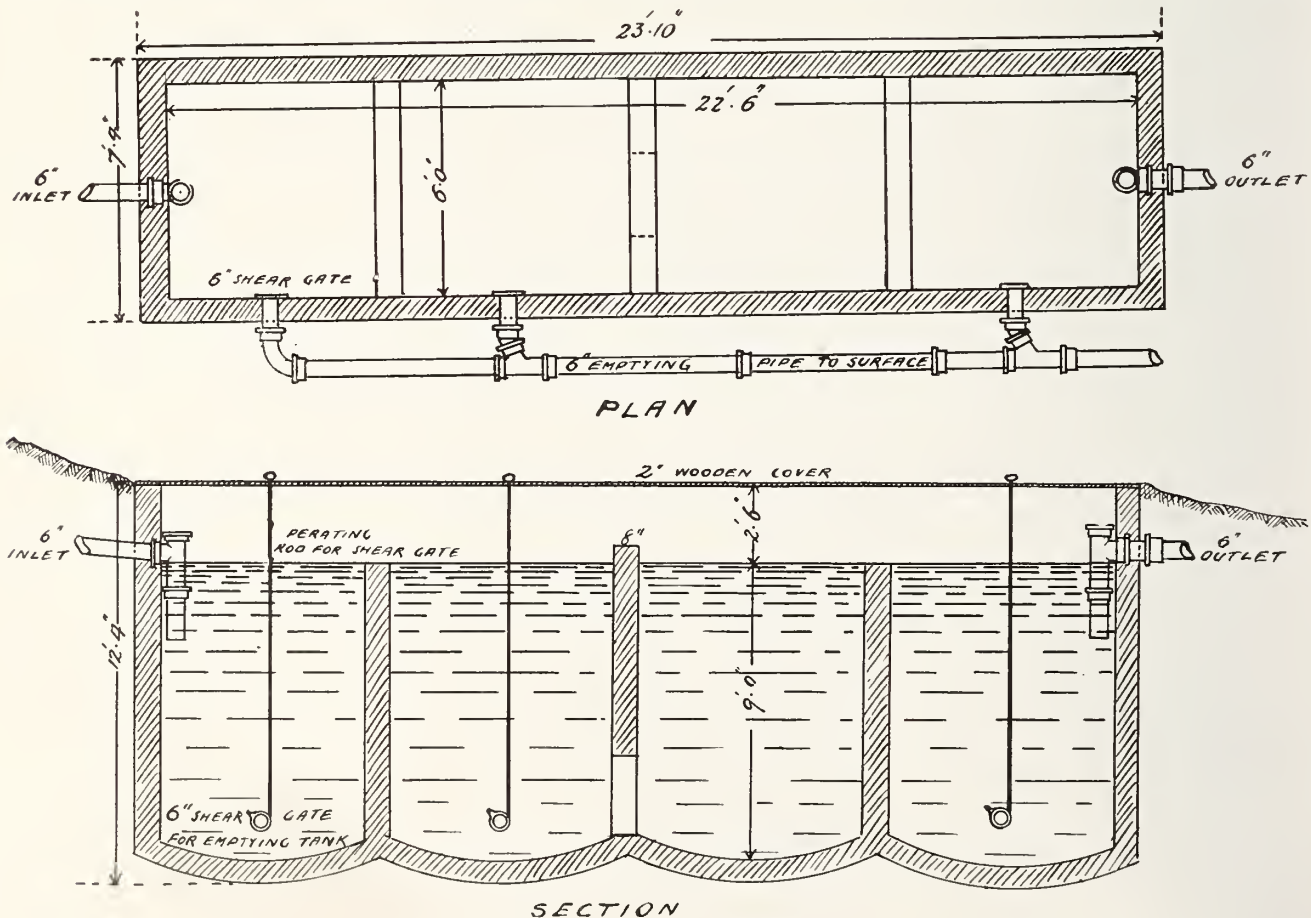


Fig. 1.—Design of the Septic Tank.

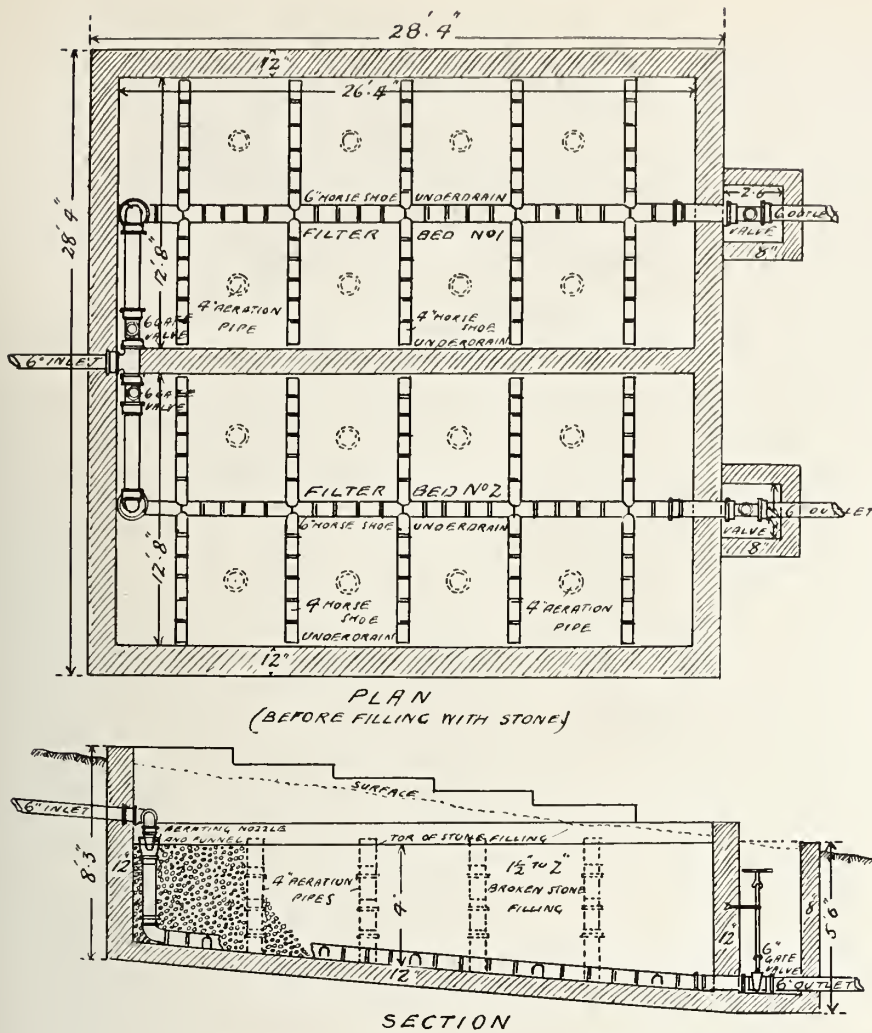


Fig 3.—Contact Beds for Final Sewage Purification.

by hand labor. A safety overflow pipe is provided about 12 inches above the level corresponding to the normal capacity of the tank. This may lead to some surface ditch or onto land at a sufficiently low level. It is merely provided to guard against negligence of the man in charge of the plant. The attendant is instructed to empty the tank twice each day. The same collecting tank can also be used if a bricking filter or contact beds are used. In a majority of cases owing to the rocky formation of the country, land treatment is not feasible, and therefore the final purification must be accomplished preferably by contact filter beds.

Using contact beds, two must be provided to purify the daily amount of sewage. These are shown in Fig. 3. The liquid or net capacity of each bed is 3,000 U.S. gallons, or equal to one-quarter the daily volume of sewage. The two beds occupy an area of about 28 square feet. Each bed is filled to an average depth of 4 feet, with broken stones of 1 1/2 to 2 inch size. The bottom of the bed is suitably drained by means of 6-inch horseshoe drain tiles with 4-inch

branches. The effluent pipe is closed by means of a gate valve operated by the attendant. At the inlet to the contact bed the arrangement of the piping is such that the sewage can be turned first into one bed, then into the other. Normally, with two fillings a day for each bed, both beds are used simultaneously.

While the usual practice is to fill the contact filter bed from the top and to distribute the sewage evenly by means of perforated surface troughs. The bed is shown in the illustration as being filled from the bottom, the inlet pipe being extended downward into the bed of the bottom drain. This is done with a view of preventing any sewage smell arising from the filling of the bed. The contact beds remain uncovered, but should be suitably screened from public view by planting shrubbery around them. The purified sewage is discharged by means of an outlet drain, with 6 inch gate valve, into the lake.

#### Chastisement Needed.

An Ontario firm have received the following letter accompanied by a cheque: "Your bill, you remark, is long overdue. I remark, plumbers' bills should never be paid. But, seeing you are a man before a plumber, I enclose you cheque for \$6.80 in full. Kindly send receipt." What answer would you give?

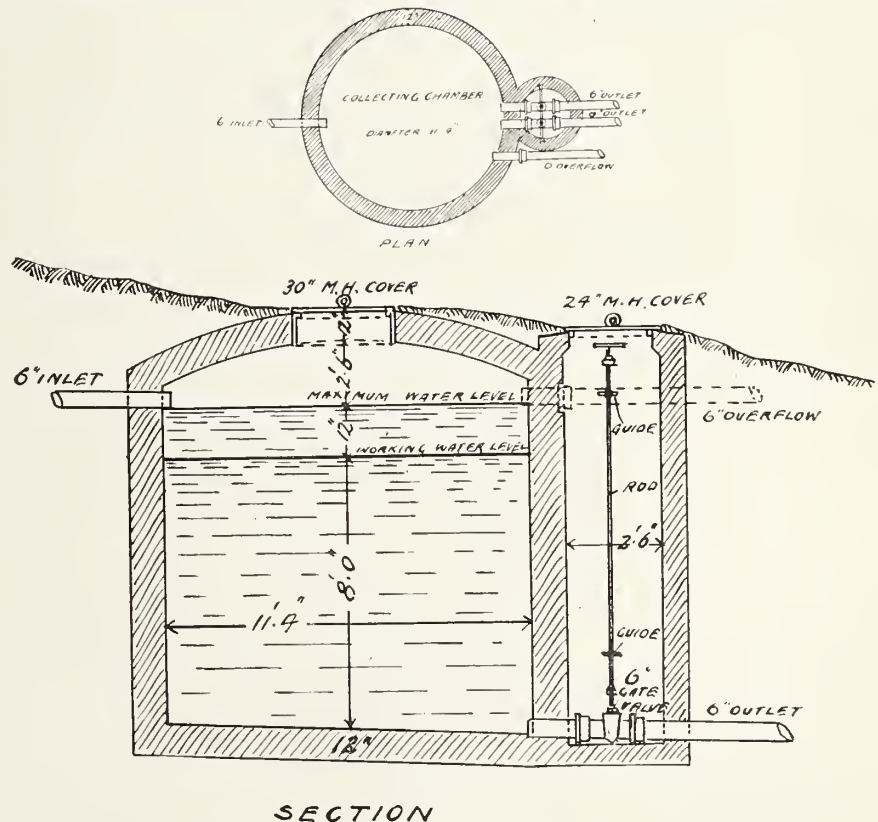


Fig 2.—Liquid Sewage Tank.





# POINTS ON HEATING

by CHAS. H. DENISON



## Points on a Six-Apartment Steam Job.

The heating of flat buildings and apartment houses in the larger cities has been trimmed down to a mighty fine point; trimmed so far in point of fact that a large percentage of the jobs fail to give satisfaction when the zero weather comes on. In some of the large cities well regulated and practically heated flats are bespoke several times over just on that account. Many descriptions one sees are plans—that are supposed to work, or a new job just put in and trusted to work. The value of this article rests in the fact that it is a job that made good in weather showing 25 below zero, while the wind registered over 50 miles an hour. The writer does not attempt to give the entire plan; but has made note of a few points both for and against this job which stood the severe test. This is a steam job, one pipe plan and gravity return. The steam main starts high at the boiler and follows around the four sides of the basement at a distance of about  $3\frac{1}{2}$  feet from the outer wall.

The main starts out from four inches in size and is reduced from time to time

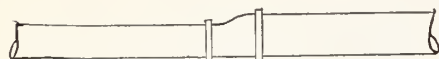


Fig. 1.

as the occasion seems to call for. In reducing these sizes on the main the contractor was wise enough to make use of the type of reducer shown in Fig. 1. This is nothing new, or special, but just the same only about one contractor in four uses this type on account of the trouble and expense. It puts the bottom of the main all on the same level and is much to be preferred to the ordinary manner either by reducing couplings or bushings.

The risers to the different rooms were concealed behind the partitions and on all pipes there must have been a correct pitch, because no snapping or cracking ever occurred while the job was in action. The best of jobs, however, can be made to look cheap by some oversight, or perhaps a desire to "cut corners."

In Fig. 2 the manner in which the radiators were taken off the risers is

shown. Now while this is most direct, the fewest number of turns possible and all that, and the job furnished heat in plenty whenever desired, the

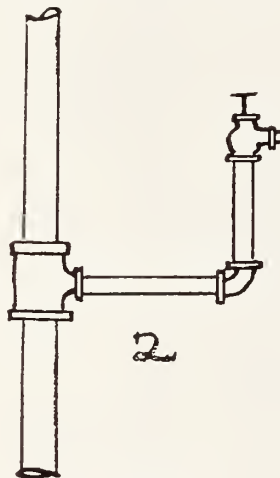


Fig. 2.

contractor failed to make any provision whatever for expansion.

Perhaps he thought that in an apartment only three stories high, the expansion would take care of itself. It did, but in so doing it caused every radiator in the building to raise at the valve, and the legs were anywhere from a half to three-quarters of an inch clear of the floor.

Thus an appearance of carelessness, cheapness and lack of foresight was shown. It would not have cost more than five dollars in nipples, ells and time to have so provided for the expansion that every radiator would have stayed on the floor where it belonged.

The point I wish to make is don't neglect the expansion in a three-storey building — for it will fool you every time that it is not properly provided for.

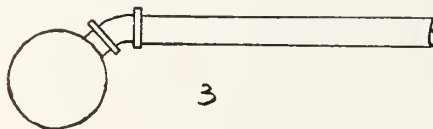


Fig. 3.

Fig. 3 shows the manner in which each branch to the riser was taken off the main. This is less work than taking directly off the top. Gives one a

chance to run the main higher in the cellar, and also affords a much more free opening for the condensation to return to the main, as it will tend to cling to the bottom of the pipe, ell and nipple, and thus leave a bigger opening for the steam to pass into the radiator. This set of apartments became well known for the amount of hot water furnished continuously. One is supposed to have hot water at all times in a modern flat or apartment building, but only about two in four ever have same.

In the winter months the hot water was supplied from a coil placed at the back of the firepot in the steam boiler, and set straight up and down as shown in Fig. 4. Of course it was then connected to the large storage tank in another part of the boiler room. The writer has heard it said many times that a heating coil built as here shown could never successfully heat; but wishes to state that this one did most successfully heat a storage tank of some 250

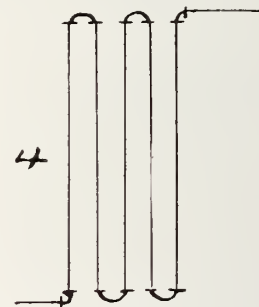


Fig. 4.

gallons and heat it so hot that the water nearly boiled several times. "The proof of the pudding is in the eating." I cannot say much for the facility for ever cleaning out this coil, but it surely did the work.

From some estimating that the writer did, it appeared that the radiation must have been figured according to the 2-20-200 rule. There were 42 radiators in the building, six in each apartment. In every case (except the bathroom) the radiator sat near the outer wall. This, of course, helped create a good current of air over the radiator, and assisted materially in the ease with

(Continued on page 22)

# Complete Course of Sheet Metal Work

By L. W. KOSER

In problem 17 plate 16, we show a T joint between a large and a small pipe. The circle fig. 1, representing the large pipe, is first drawn; then the circle fig. 2 representing the small pipe.

Then the arm of the small pipe joining the large one, as shown A B C D, is drawn.

Now construct the elevation fig. 3, and the plan Fig. 4 with the arm M. N. O. P.

We first want to develop the mitre line M.P. To do this divide one-quarter of the small circle Fig. 2 into equal spaces and project lines from each of these points until they touch the circumference of the large pipe Fig. 1 and number them the same.

Now divide the plan Fig. 4 into the same sized spaces as Fig. 2, and project lines up from each number any distance so they will intersect lines drawn from the numbers on the circumference of Fig. 1. For instance a line is drawn from No. 4, Fig. 1. Then a line is projected up from No. 3 and 5 and is intersected by a line from No. 3, Fig. 1. Then a line is projected from Nos. 2 and 6, and is intersected by a line from No. 2, Fig. 1. A line traced through the points of intersection gives the mitre line.

The stretchout Fig. 5 is then laid out and the pattern developed for the arm M. N. O. P. as explained for problem 14.

To get the opening H. Fig. 6 it is only

necessary to lay off enough of Fig. 1 to accommodate the size of the opening.

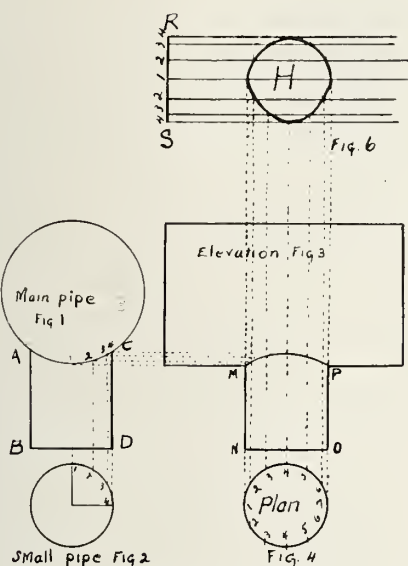
To do this lay out a line as R. S. Now set one point of the dividers at Fig. 1 and the other at 2, and transfer into spaces like this to the line R. S.

Have 1 in about the centre of this line and two on each side of it.

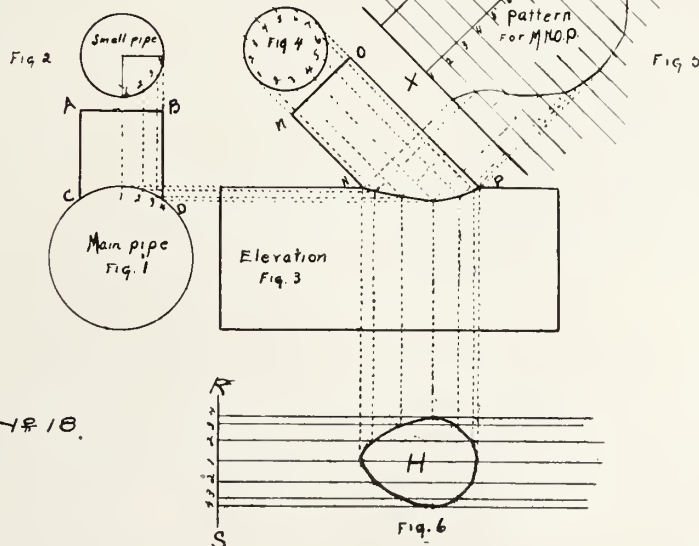
Then transfer the spaces 2 and 3 and 3 and 4. Each space it will be noticed is smaller than the last.

Then the line 4 to 4 represents the amount of space which the small pipe Fig. 2 takes up on the side of the large pipe Fig. 1.

Draw the measurement lines from each number.



PROBLEM # 17



PROBLEM, N# 18.



Now place the T-sqr. parallel to the line R. S. Bring it against the different points on the mitre line and cut out the corresponding measurement lines as explained for problem 14.

Problem 18 is an oblique intersection between a large and a small pipe.

First draw the main pipe Fig. 1, then the small pipe Fig. 2, then the arm A. B. C.

Then the elevation Fig. 3; then Fig. 4 and the arm M. N. O. P.

Divide one-quarter of Fig. 2 into equal spaces and drop lines to Fig. 1.

But holding men responsible for their work will limit the business in another and a better way. Men who are not practical, but who take up plumbing, usually have as foreman a highly skilled man. It is the smaller men—the men who manage to scrape through the civic examination, or who avoid it, who do the harm. But if their mistakes are brought home to them; if they are made to pay, the result will be altogether satisfactory. It will result in the work being given to the men who are capable of doing it. It will result in better service for all and a better standing for the Sanitary and Heating Engineer.

## Decision Against Plumber Hailed by Plumbers

**Montreal Woman Gets Damages Because Heating System Was Poorly Installed—Sanitary Engineers Generally Seem to Approve of the Judge's Decision—By Making Men Responsible in This Way the Incapable Will be Weeded Out.**

**A** CASE of great interest to the Sanitary Engineer has just been decided in Montreal. A woman it was who entered the action. Ever notice how often it is a woman who starts something interesting? Take Eve for instance, who is responsible for the introduction of work, and who thereby conferred a great favor upon men. But this is digressing.

The particular woman in question felt that she had a grievance against a certain Montreal Sanitary Engineer who had installed a heating plant for her. She told her grievance to Mr. Justice Archer, and lo and behold, the Judge agreed with her and awarded damages.

The particulars of the case can be given briefly. The woman, it appears, had asked a certain Sanitary Engineer to install a heating plant in her home. She wanted her house warm, and specified, and had the specification in writing, that the heating apparatus should be such that it would keep the atmosphere within the house up to 70 degrees Fahrenheit, even when the thermometer showed 20 degrees below zero without.

### Water in Reservoir Freezes.

Here was where the trouble arose. The boiler was placed, and the radiators installed. The money for the work was also paid. Then came the cold weather—it does get chilly in Montreal during the winter. Some below-zero weather came and the heating apparatus did not live up to specifications. Not only did the temperature within the house sink considerably below 70 degrees Fahrenheit, but the water in the reservoir even froze.

The lady was naturally incensed, and she made complaint to the man who had done the work. He paid little attention. She wanted him to make such changes in the system as would make it efficient. This the man would not do, so the woman went to another Sanitary Engineer—you notice that even in her troubles she did not lose faith in the Sanitary Engineer—and this man she got to make the necessary repairs. He

had little trouble doing this, the principal alteration needed being a change in the location of the reservoir.

### The Woman's Contention.

But this repair work cost money. To be exact, it cost \$34.45. Now it was to the expenditure of this amount that exception was taken. The householder did not contend that the last plumber had charged too much, but she did hold that had the first plumber done his work properly the repairs of the second man would not have been needed. Such was the contention she made before Mr. Justice Archer.

The outside public, who love to scoff at lawyers, ministers, policemen—any one indeed who does work other than their own—would laugh were this statement made before them; yet be it known that Sanitary Engineers generally in Montreal seem pleased that Judge Archer decided in favor of the woman. They agree that she was entitled to damages which would compensate her for the repairs which were necessary on account of the faulty construction. It is such work as this which is inclined to shake peoples' faith in the Master Plumber. The general feeling among the trade is that a man should do his work right, and if he does not he should be made to pay for his mistakes. This is the road to safety. This will result in a weeding out process.

### A Good Way to Limit Trade.

Every Master Plumber will admit that there are a number in the trade who have little right to be in it. Some time ago a measure was put before the Montreal council which aimed to make it illegal for any man to take up a plumbing business who was not practical. This was rejected. It seems doubtful if such a measure could ever be passed. There does not seem any way to prevent a man investing his money in any lawful business which he may desire. Examinations may make it necessary for the man or his foreman to have a wide practical knowledge, but this is seemingly as far as limiting the business can go.

### MOVE TO NEW QUARTERS

The Winnipeg branch of the H. W. Johns-Manville Co., owing to their fast-increasing business in asbestos, magnesia and electrical supplies, has found it necessary to move into new quarters at No. 92 Arthur street, Winnipeg, on or about June 1.

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### POINTS ON HEATING.

(Concluded from page 20)

which the heating was done, for not more than half a pound of steam was ever carried during the entire season in even the coldest days. A little oversight or perhaps too close a price prevented the contractor from placing radiator shields on the radiators, and the result was that every ceiling over each radiator was badly "smoked" up, thus giving a second black eye to an entirely meritorious job. These radiators all humped upon one end, and the dirty smoked up ceilings, both results entirely unnecessary. I want to ask if you really think it paid the contractor to allow the same, just to save a mighty few dollars when the rest of the job was A No. 1?

The writer has made no attempt to give a full description of this job, but merely "points" to show special features, and also how a little carelessness may cause much unsightliness and show up at the most noticeable point of all. A word to the wise is sufficient. When you do a good job, one that you know will work all right in all kinds of weather, don't spoil that job by cutting it short on just the places which show the very most, and will lead people to think that you don't know your business.



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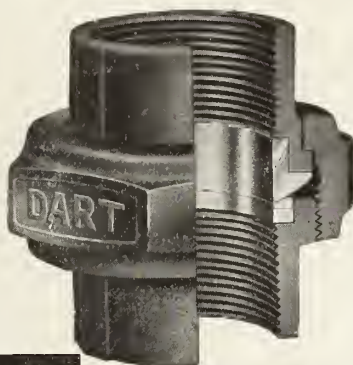
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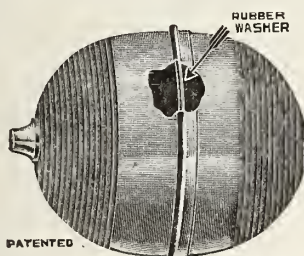
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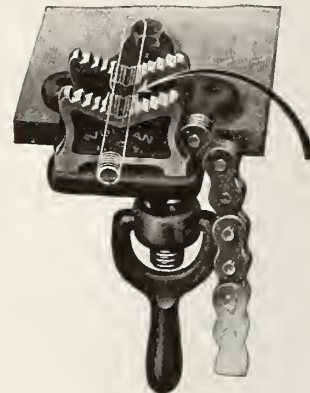
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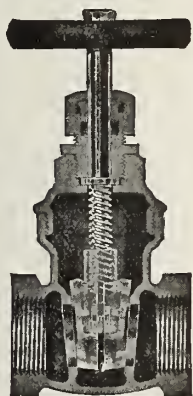
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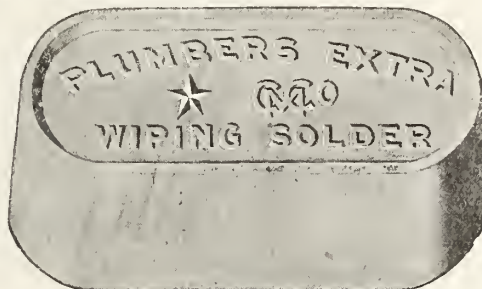


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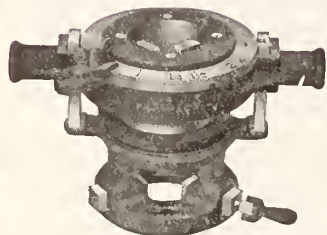


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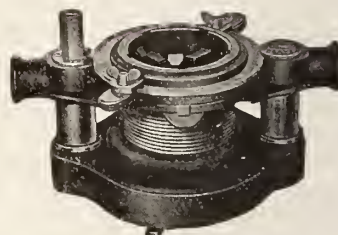


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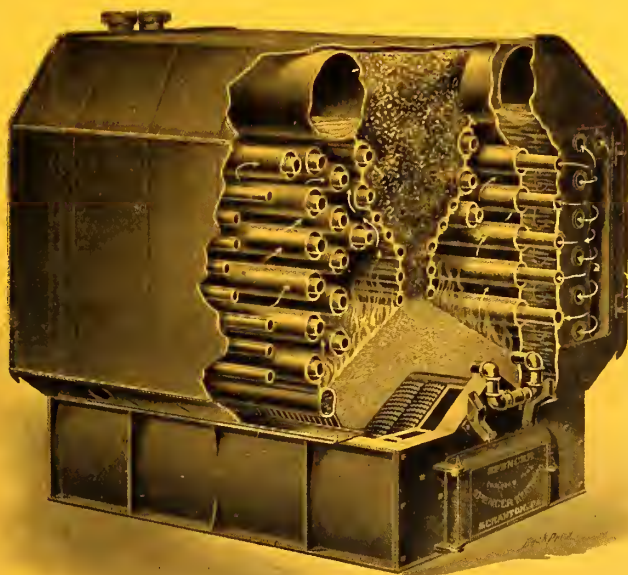
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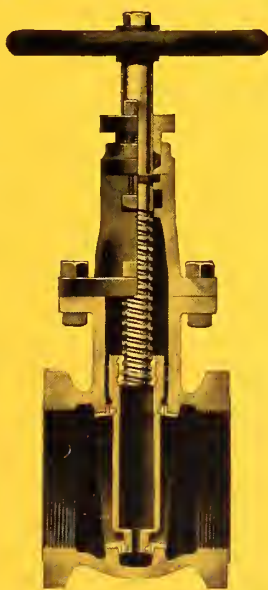
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No. 13



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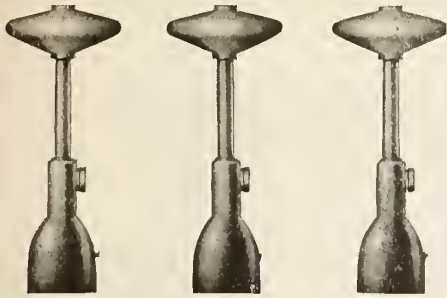
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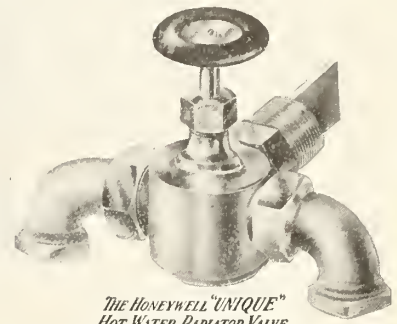
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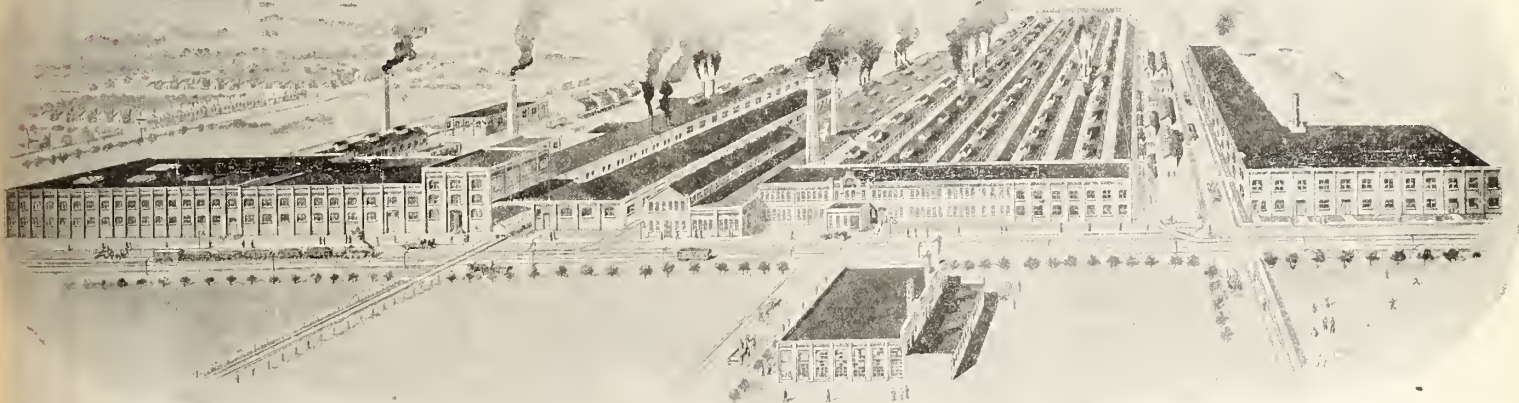
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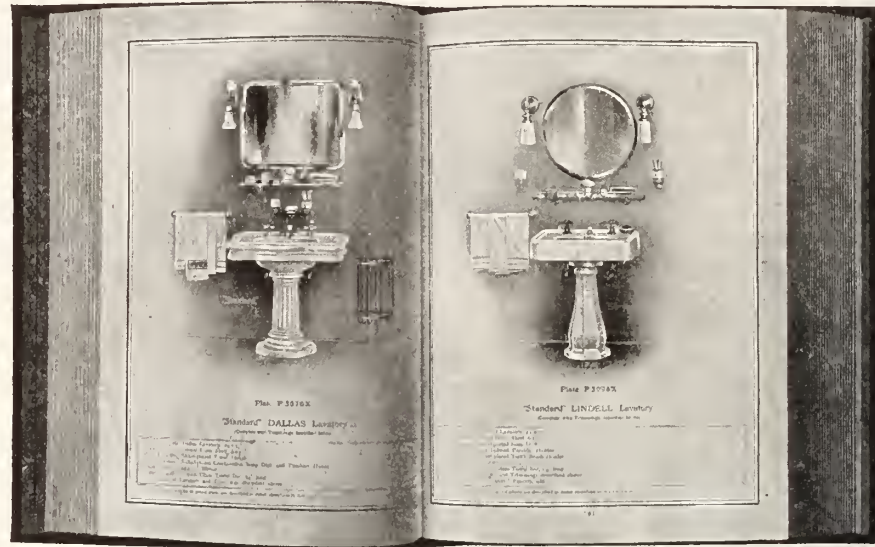
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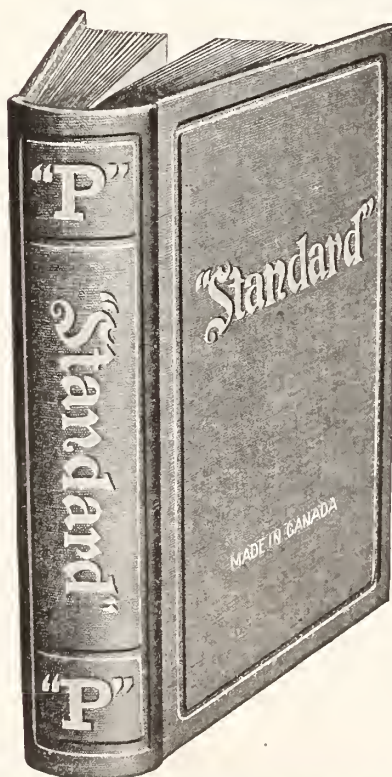
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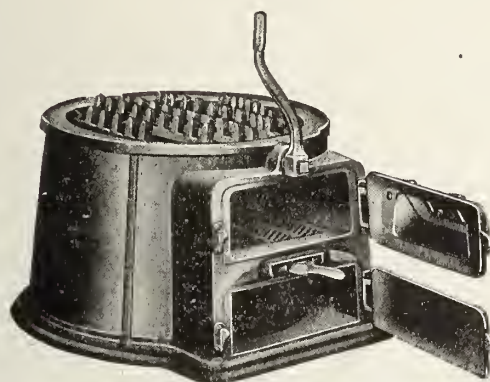
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

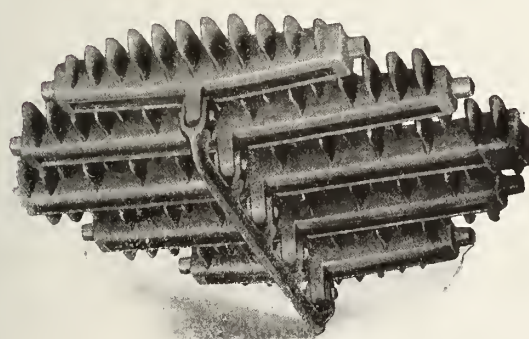
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

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**July 18 to 25, 1912**

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After Convention—Calgary to Laggan, and see the famous Lake Louise on the Mountain, then to Field through the Rocky Mountains to Vancouver and Victoria.

RETURNING EAST—Vancouver to Nelson by rail and boat, then to Kootenay Landing by boat, rail through the Crow's Nest Pass, through Fernie and the Frank Landslide to Macleod, Lethbridge, Medicine Hat, Swift Current, Moose Jaw, Regina, Brandon, Winnipeg, Port Arthur, and boat to Eastern Ports.

A trip well worthy of a true Canadian's time and expense.

Our representatives—Mr. B. A. Balch and Mr. Thos. Frost—will be pleased to meet you in Calgary during the Convention, and if you have any time to spare, they will be glad to show you a number of splendid Spencer Self-Feed Boiler installations.

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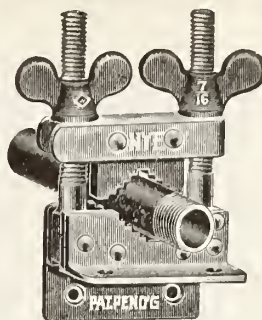
But you don't have to know music to appreciate a "Nye Pocket Vise."

It is so simple and works so easily that it needs no explanation. We have manufactured and sold many thousands of these little Vises and have never heard one word of complaint.

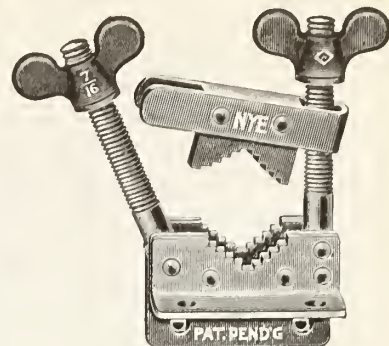
Slip me a little word about sending you one. I'm waiting for your order. And, if the tool isn't just what the doctor ordered, send it back, I'm here to stay, to do business a great many years, and I'm after your good will as well as your orders. I'm playing a straight game and want to do business with straight men who appreciate straight goods.

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We have a great deal of pleasure in announcing to our friends in the Trade that **our complete line** of Boilers and Radiators for Steam or Water are now ready for delivery.

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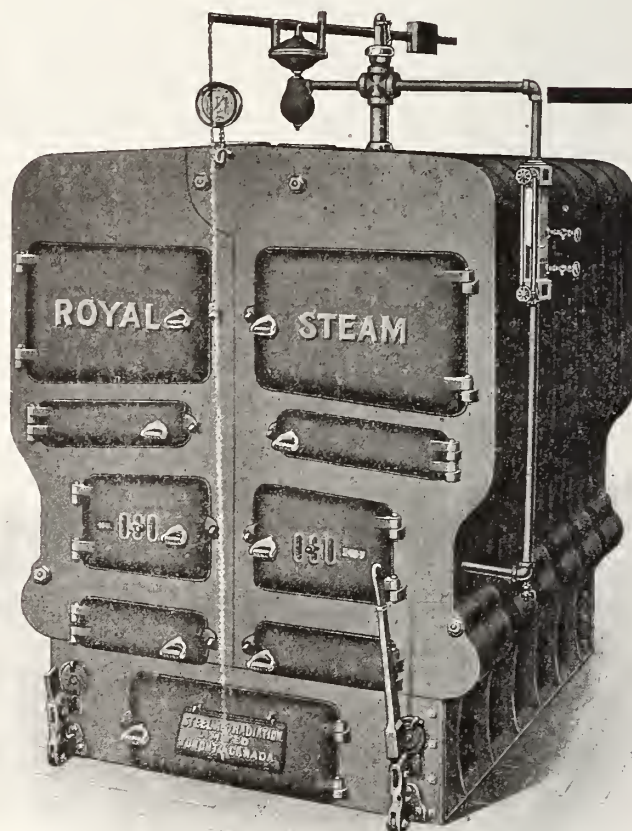
This is our new 48" **"Royal"** Steam Boiler which is already in great demand.

Why not try a Royal on your next contract? It will make money and friends for you.

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# Itinerary for Delegates Mapped Out

Officers of Canadian Society Plan for All Delegates to Travel to Calgary Together—When Trains Leave Central Points Which Will Make Connections—About the Rates.

## ALL ABOARD!

**L**O, the call is not for a ride on the now famous steam roller. It is the call to Calgary, where, as hundreds of sanitary engineers know, the convention of the Canadian Society is shortly to be held.

Nothing new in that, some will say. Patience, gentle reader. It is true some few things have been said about Calgary from time to time. But then Calgary people themselves put their modesty behind them, on occasions, and make some laudatory remark about their home city. The same privilege can surely be accorded an outsider who has something to explain about the coming convention.

Though the sub executive of the Sanitary and heating engineers have been working on this convention for months, all the arrangements are not yet completed. John Watson, the secretary, has however now completed an itinerary which will save the delegates much trouble, and which will enable all who are going to the convention to travel together.

The itinerary, as decided upon is as follows:

### CANADIAN SOCIETY OF SANITARY AND HEATING ENGINEERS. July 18 to 25th.

Thursday, July 11—Leave Halifax 8.00 a.m.  
Train No. 15.  
Friday, July 12—Arrive Montreal 8.00 a.m.  
Train No. 15.  
Thursday, July 11—Leave St. John 5.55 p.m.  
Train No. 15.  
Friday, July 12—Arrive Montreal 8.30 a.m.  
Train No. 15.  
Friday, July 12—Leave Quebec 1.30 p.m.  
Train No. 352.  
Friday, July 12—Arrive Montreal 6.30 p.m.  
Train No. 352.  
Friday, July 12—Leave Montreal 10.00 p.m.  
Train No. 21.  
Saturday, July 13—Arrive Toronto 7.35 a.m.  
Train No. 21.  
Friday, July 12—Leave Ottawa 10.45 p.m.  
Train No. 33.  
Saturday, July 13—Arrive Toronto 7.00 a.m.  
Train No. 33.  
Saturday, July 13—Leave Toronto 12.45 p.m.  
Saturday, July 13—Arrive Port McNicoll 3.45 p.m.  
Saturday, July 13—Leave Port McNicoll 4.00 p.m., by boat, C.P. SS. Assiniboi.  
Sunday, July 14—Leave Sault Ste. Marie 11.30 a.m. by boat, C.P. SS. Assiniboi.  
Monday, July 15—Leave Port Arthur 6.30 a.m. by boat, C.P. SS. Assiniboi.  
Monday, July 15—Arrive Port William 7.30 a.m. by boat, C.P. SS. Assiniboi.  
Monday, July 15—Leave Port William 8.30 a.m., C.P. Ry.  
Monday, July 15—Arrive Winnipeg 9.15 p.m., C.P. Ry.  
Monday, July 15—Leave Winnipeg 11.00 p.m., C.P. Ry.  
Tuesday, July 16—Leave Brandon 3.00 a.m., C.P. Ry.  
Tuesday, July 16—Leave Regina 9.25 a.m., C.P. Ry.  
Tuesday, July 16—Leave Moose Jaw 11.00 a.m., C.P. Ry.  
Tuesday, July 16—Leave Medicine Hat 8.20 p.m., C.P. Ry.  
Wednesday, July 17—Arrive at Calgary 2.50 a.m., C.P. Ry.

Shortly before three o'clock in the morning is not an exceedingly nice time

to arrive at any place. Even Calgary might impress some unfavorably at that hour. Bearing this in mind, and also remembering that there is a city called Winnipeg which is very well worth seeing, the itinerary has been so arranged that those who wish may stay in the Manitoba capital for a day, and not miss any of the convention:

If this day's stop is taken, and it will be taken by many, the schedule will be partially changed as follows:

Arrive at Winnipeg Monday, July 15, 9.15 p.m.  
Leave Winnipeg Tuesday, July 16, 2.15 p.m.  
Arrive Calgary Wednesday, July 17, 5.55 p.m.

But J. E. Walsh and John Watson, the president and secretary of the association, respectively, have done more than arrange a time table for the convention. They have also gone carefully into the question of fares, and as a result Mr. Watson gives out the following information—information which the delegates will do well to keep by them.

### Certificate Plan.

1. Purchase a single first-class ticket and secure a standard certificate from the ticket agent from whom the ticket for the going journey is purchased (be sure and get the certificate from the ticket agent). This certificate will entitle you to return for one-third fare, and if the delegates number 100 or more you will be returned free.

2. Present your certificate to me at Calgary, not later than the morning of Monday, 22nd July, for my signature, and pay the sum of 25 cents.

### Arrangement East of Port Arthur, Ont.

3. Going—One-way first-class ticket and standard convention certificate to be issued as follows:—All rail, Wednesday, July 10 to Saturday, July 13. Lake and rail tickets will be sold to connect with steamers sailing Wednesday, July 10 to Saturday, July 13.

4. Returning—Standard convention certificates properly filled in and executed to be honored at Calgary up to and including Friday, August 9, for tickets for the return journey bearing final transit limit, Friday, Aug. 16, on which stop-overs will be allowed at points west of Port Arthur, Ont.

5. Lake Arbitraries. (a) Via C.P. SS. line to Sarnia, N. N. Co., and Port Arthur—going all rail returning lake and rail \$9.00 additional. Going lake and rail, and returning all rail, \$4.00 extra. Going lake and rail and returning lake and rail, \$13.00 additional. These additional fares to be paid at Calgary when certificates are honored

for the return journey. (b) Via Sarnia, N. N. Co. and Duluth—going all rail, returning lake and rail; \$11.50 additional; going lake and rail returning all rail, \$6.50 additional; going lake and rail, returning lake and rail, \$18.00 additional. These additional fares to be paid at Calgary when certificates are honored for return journey.

6. St. Lawrence Route—Tickets will be honored via St. Lawrence route on presentation of rail excursion tickets to ticket agent R. & O. Navigation Co., Toronto, or to purser on board of steamer and on payment of the following arbitraries. Toronto or Charlotte to Montreal \$8.00; Kingston or Clayton to Montreal, \$4.50. The same arrangement (all rail) have been made with the railways west of Port Arthur, namely the C.P. Ry., C. N. Ry. and G.T.P. Ry., but the tickets for the return journey must be purchased on or before the 28th July, and return by the same route. If delegates have to travel over more than one railway to place of meeting, they will require to purchase tickets and obtain standard certificates, as above, from each railway.

All this makes the traveling exceedingly easy. Almost easier to go than to stay. Certainly some are finding it hard enough to stay. That is the worst of these conventions. It is not every one who feels it possible to take them in. But for the others there will be the pleasure of reading about what is done and said. The proceedings will be fully reported.



### RANGE BOILER DOESN'T HEAT.

Editor Plumber and Steamfitter. — I have a range boiler of about 100 gallons connected to a range and can not get the water hot enough to satisfy the owner. Can you tell me the reason or suggest how to fix it so it will work?

W. P. J.

Reduce the size of the range boiler to one holding about 40 gallons and you should get all the hot water desired. Some plumbers overlook the fact that most cooking ranges are made to bake and cook—the heating of the water in the range boiler being an entirely secondary consideration. Because of this the size of the waterback is comparatively small, and its ability for heating water limited. If the owner requires hot water in quantities that would be furnished by a 100 gal. tank, the better way would be to install a separate heater to this tank, for the reasons which we have given just previous.—D. C. H.



# Steam and Hot Water Fitters Meet

Annual Convention of the American National Association Held at Atlantic City—An Interesting Report Received on Efforts Made to Bring About Standardization of Materials.

ATLANTIC CITY, N.J.—“Not all work, not all play,” was the spirit that moved the twenty-fourth annual convention of the National Association of Master Steam and Hot Water Fitters holding sessions on June 10, 11, 12 and 13.

The past work of the organization, and particularly of its officers and the members of the committee on trade relations and the committee on standardization, was most forcefully brought before the delegates who attended this annual gathering. The provision made for their comfort and enjoyment during the sojourn in Atlantic City reflects both credit and honor upon the officers who had in charge the detail in connection with the arrangements.

President Denny, of Newark, N.J., in his annual address pointed with pride to the efficiency of the organization and referred to many of the problems confronting the individual members of the association and many problems which are, in a measure, evil practices in the steam fitting trades that can be overcome by close application of the basic principles of the association. In presenting this report, President Denny did not “view with alarm” the opposition of certain manufacturers to the “1912 U.S. Standard” Schedule of Standard Weight and Extra Heavy Flanged Fit-

tings and Flanges, and briefly outlined the result of the work in connection with the preparing and the adoption of this schedule by the committee on standardization and by Henry B. Gomers, secretary.

Secretary Gomers in presenting his report also pointed with pride to the work of the committee on standardization and this report presented in detail to the membership the progress of organization work since its last annual meeting.

The afternoon of the first day of the convention, Monday, June 10, was devoted to executive sessions of various committees, and an executive session of the Board of Directors. A meeting of the Trade Relations Committee was held at 10.30 o'clock for the purpose of outlining its convention work. The Committee on Standardization met in executive session at 2.30 o'clock for the purpose of revising the report of that committee as it would be presented after the formal opening of the convention on Tuesday morning.

## Standardization.

In the course of his report, Secretary Gomers said:—

Mention was made in the early part of this report that the report of our Committee on Standardization does not begin to tell of all the hard work

that has been done incidental to the preparation of “The 1912 U.S. Standard Schedule of Standard Weight and Extra Heavy Flanged Fittings and Flanges.

The statement was not meant to undervalue in any way the report or the work of your committee on standardization, but on the contrary, it is intended to accentuate and bring into sharp relief the immensity of the undertaking and the thoroughness with which it has been accomplished.

There are men in attendance at this convention who were present at our 17th annual convention held in this room on June 13th, to 15th, 1905, and they will recall to their minds the fact that when the subject of standardization was discussed, there was not a dissenting voice raised, nor any suggestion made in opposition to the adoption of the motion which provided for the appointment of a committee to take up the work of standardizing several articles found necessary to standardize, and thereby relieve the craft of a burden that had been carried for a long time past.

As a result of the action taken at the convention held in 1905, a committee of three was appointed, and after considerable preliminary work, the committee called together a number of manufactur-



A group of delegates at the Twenty-fourth Annual Convention of the National Association of Master Steam and Hot Water Fitters, Atlantic City, June 10, 11, 12 and 13.



ers for a conference, which was held at the rooms of the American Society of Mechanical Engineers, at 12 West 31st street, New York City, on October 26, 1905. Mr. Arthur C. Walworth, of Boston, presided, and Mr. Henry B. Gomb-ers acted as secretary of the meeting, at which were present or represented a number of manufacturers — some of whom, strange to say, are now under the impression that they have not had sufficient time in which to take up the matter of agreeing upon a standard for flanged fittings and flanges.

Right here, let us make plain that prior to the conference with the manufacturers, on October 26, 1905, our committee had made special efforts to "obtain the best ideas of the leading master steam fitters and contractors who were engaged in the erection of apparatus containing pipe, fittings and valves, and who were therefore conversant with the defects and drawbacks of the "go-as-you-please" system of weights and measurements."

We have in our possession a transcript of the stenographic minutes of that meeting, and from it we quote a few of the salient and pertinent features, so that there can be no misunderstanding of what took place at that time.

Chairman Walworth stated, to those present at the conference referred to, that a similar resolution to the one under which his committee had been appointed was quite generally discussed at the sixteenth annual convention of our association held in Atlantic City on June 13th-16th, 1904; so that it is now an established fact that the discussion concerning the subject of standardization was known of as far back as 1904 by those in attendance at our convention of that year, and was known of by the manufacturers who were in attendance at the conference held in New York City on October 26, 1905. Mr. Walworth submitted to the manufacturers on October 26, 1905, what our committee on standardization suggested for future action, and among other things, was the following, quoting the exact language used:

"That in the manufacture of flanged fittings you conform to dimensions for standard flanges as to diameter and thickness; uniform thickness of bodies, and adopt a uniform standard for dimensions face to face and face to centre. That all drilling be made in conformity with a single standard as given for pressures under 125 pounds in the standard adopted, except that flanges for 4-inch sizes be drilled with eight holes for  $\frac{5}{8}$  inch bolts instead of four holes for  $\frac{3}{4}$ -inch bolts, as at present, but on the same bolt circles.

"For extra heavy flange dimensions it may be advisable to make some changes, as at present it appears to us that they are susceptible to much modification.

"That in the manufacture of valves you adopt a standard dimension from face to face for standard sizes to be used up to 125 pounds and another for pressure up to 250 or 300 pounds.

"That you make a standard size of hexagon on screwed valves, and make all flanges to conform with the adopted sizes for flanged fittings; also a standard diameter of stem, a standard diameter of stuffing boxes and a standard thickness of shell are desirable.

"That finally you abandon the manufacture of  $3\frac{1}{2}$ -inch,  $4\frac{1}{2}$ -inch, 7-inch and 9-inch sizes, and place on all articles some registered trade mark.

"It is the intention of this committee that our final conclusion be published as widely as possible, and placed in the hands of all engineers and architects, or others who design and prepare plans and specifications, asking them to observe them in their work, and we ourselves pledge every effort to encourage in the way of trade and influence the successful carrying out of these recommendations."

You will notice the suggestion made by

our committee, "That all drilling be made in conformity with a single standard as given for pressure under 125 pounds in the standard adopted, except the flanges for 4-inch size be drilled with eight holes for  $\frac{5}{8}$ -inch bolts instead of four holes for  $\frac{3}{4}$ -inch bolts as at present, but on same bolt circles." You will now take notice that this suggestion was adopted by the Joint Committee of our Association and the American Society of Mechanical Engineers.

You will notice the suggestion that was made by our committee, "For extra heavy flange dimensions it may be advisable to make some changes as at present it appears to us that they are susceptible to much modification." You will now take notice that this suggestion has been adopted by the Joint Committee of our Association and the American Society of Mechanical Engineers.

"One striking feature of the conference of October 26, 1905, was the suggestion that, "It would be well for the question of valves to be taken up by the valve manufacturers, and the same in regard to fittings." "Where there is an association of such manufacturers that association should be the one to take up the question." "Our association does not wish to select the committees, and believes each line of trade should select its own."

## Refuse to Tender on Sub-Contract; Action Taken by Montreal Firms

Montreal, June 28.—It is only a fortnight since the Montreal Association took steps regarding the question of tendering on a sub contract. Notice was then sent to the architects that they must make a separate contract for plumbing and heating, if they wished the members of the association to tender on such work. Apparently some of the architects did not realize that the members of the Montreal association meant what they said. But they have recently had reason to change their opinion. Several requests for tenders have been sent out lately, and have been returned, the sanitary engineers to whom they were forwarded declaring that they simply would not tender on a contract for which another contractor was responsible.

Just this week the architect received such a refusal. He advised one of the large plumbing firms of the city that a contract for a large building had been given to the ——— contracting firm, and suggested that they tender for the plumbing work.

The head of the plumbing house sent a reply immediately, stating that he would not tender on this job, nor on any other where the tender went to another contractor. He emphasized the need of making tenders for heating and plumbing separate from the tender for erecting the building.

This is but one case. Already there have been several such refusals sent out by sanitary engineers.

"When the architects get a few more such messages," remarked one member of the local association, "and when the large contractors find that the better class of the sanitary engineers will not tender on a sub-contract, they will begin to see that our demands must be met."

It is only recently that the Montreal association has taken its stand. Probably this question of sub-contracts will be considered at Calgary. When it is up for discussion some emphatic statements from the Montreal delegates may be expected.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, JULY 1, 1912

THE TORONTO GLOBE remarked editorially in a recent issue: "The City Council is in a fair way toward creating a close corporation in the plumbing business in Toronto. The influences toward that end never rest.

### PLUMBING INSPECTION

Under the guise of averting defects in the sanitation of buildings there is always an agitation on foot to have the plumber, and not the plumbing, inspected. Whether the plumber is a union or non-union man, whether he has had a technical school course, an apprenticeship, or a chance at picking up the trade, whether he does the work with his hands or his feet, whether he is old or young, married or single, is nobody's business but his own. It is the duty of the city authorities, through their inspectors, to see that he does his work properly. The city's duties and the city's rights go no further than this. When work is not done properly the authorities must see that it is done over again until it is done properly.

In this demand there must be no exception or allowance. Perfect workmanship and sound material must be demanded, and nothing less can be accepted. Who shall do the work or furnish the material is a matter for builders, contractors and workers to settle among themselves. Let every job be inspected, and rigidly inspected. That is easy, and it is all that is necessary. To inspect the workmen would be an impossible task, not only worthless but mischievous. All the skill and knowledge in the world will not make a dishonest plumber do honest work. The work must be inspected. A nominal fee with registration, or, still better, no fee with registration, may be an aid in fixing responsibility for defective work and for insuring inspection of all work. This is all the attention that need be given to the plumber. The time and energy of the inspector should be devoted to the plumbing."

The Globe has, on several occasions, gone out of its way to attack the sanitary trade. In the present instance it has stated a half truth, but has not refrained from indulging in uncalled for innuendos at the expense of the men engaged in plumbing and heating work in Toronto. It is not our intention to take issue with The Globe on the question of the standing and intentions of the men in the trade. Suffice it to say that the Toronto Association of Sanitary and Heating Engineers is made up of men as high-minded and honorable as will be found engaged in any other work or calling. The imputation that they are secretly working to form a "close corporation" is absolutely unfair and unwarranted.

Plumber and Steamfitter agrees with The Globe that plumbing work should be inspected thoroughly. Any

reputable master plumber takes the same stand. A competent man has no need to fear inspection of his work. On the contrary, he welcomes it. Inspection of work by careful officials leads to the suppression of cheap and unsanitary workmanship, and this is one of the objects aimed at by members of the craft.

The Globe is far astray, however, when it scoffs at personal examination. Surely it has not forgotten that "an ounce of prevention is worth a pound of cure." If the civic authorities made sure that all men entrusted with the carrying out of sanitary work were competent, there would be little or no "shoddy work" done. Are the medical fraternity a "close corporation" because no man is allowed to practise medicine unless he has secured his degree and passed his medical council examination? The restrictions placed on the practice of medicine are necessary for the preservation of public health. Inspection to make sure that would-be doctors were prescribing correctly would never do. Proper sanitary appliances are also necessary for the preservation of health. Why not make sure that a man has rendered himself competent before he is permitted to undertake this class of work? This rule will not bar anyone out of the trade. It will simply mean that members must pass through a course of instruction first. That is reasonable and fair, surely.

The Globe states that "to inspect the workmen would be an impossible task." It is done in many places, in Chicago, Port Arthur and Calgary. In all these places, the system has been found practicable and successful.

The proper system is inspection of workmen and work as well.



ALL ABOARD for Calgary!

\* \* \*

YOU CAN usually tell a poor plumber—but you can't tell him much.

\* \* \*

THE BRITISH manufacturers could not have struck Canada at a more prosperous time. We are riding on the crest of a great wave of prosperity.

\* \* \*

THE LACK of appreciation shown a prophet in his own country is felt in nearly every other line. The sending of the Made-in-Canada train through the West, is a bold bid on the part of the manufacturers to overcome any such prejudice which may exist.

# Who's Who in the Trade : Pertinent Pointers Pertaining to Plumbers.

**T**HE subject of this sketch is known by numerous names. He was christened John Marshall, but is known to the trade from one end of the country to the other as "Jack." In Port Arthur civic circles he is called Ald. Marshall. A few who know him well oftentimes refer to him as "turnip" and it is presumed that this distinctive if somewhat undignified appellation dates back to the time that he spent several days trying to dispose of a watch. But of that more hereafter.

Jack Marshall is an octagonal sort of chap—many sided. He is a good mechanic and is also pretty keen when it comes to the business end. He is a capable executive man and has made a real success as a city father, even if he does lack the years and the ponderosity of avoirdupois which is referred to as "aldermanic girth." In the orators' league he bats about .400. Carrying this simile a step further, we remark that he ranks among the heavy hitters. Long words and cabalistic combinations of cacophonous consonants roll off his tongue as easily as water off a duck's back. If it's a "new society" to the rest of us, it's an "organization in embryo" to Jack Marshall. Jaw-crackers are his daily food. They are as much a habit with him as with the darky preacher. Only he gets them in the right place and doesn't forget to put the accent on the antepenult.

Coming back to the question of the octagonalism—Yes, Mr. Marshall, it's a new one, a brand new word, coined especially for the occasion—We're rather proud of it, too—coming back to the question in hand, the subject of this sketch adds to his other octagonalistic (also new) qualities that of being a sportsman. He plays baseball and curls. He curls so well that he won the Consolation trophy at the last Twin City bonspiel—no mean feat, either. In the Twin Cities most of the male population find that business in the winter time interferes so seriously with curling that they just have to give up their business. Anyone who can snag off a trophy from that crowd of frozen pasture pool experts is a pretty good curler.

But you meet the real John Marshall when you find him in his library at home. He will probably be buried in a volume of "Les Miserables" or right up to the ears in Shakespeare or Dickens or Thackeray. He knows books and can talk them by the hour and he has all the authors duly placed and ticketed from Charles Dickens down.



Jack Marshall is a sort of octagonal chap—Many sided.

Collecting books has been his hobby. At one stage of his career, his time was divided up something like:—One, third, work; one third, eating, sleeping, etc.; one third listening to book agents and inscribing signatures on dotted lines. It is said that book agents invariably took the same beat from the station. The question was put to one of them once:—"Where are you going?" "Don't know," was the response. "I'm following the chalk marks that I find at every corner. They were put there by the last man around." "What do they mean?" "Dead cinch ahead. Get there quick," was the reply. The trail led him to the residence of one Marshall, John of that ilk.

He has so large a library now that he has kind of lost count but estimates that there are about 2,000 books in all. There is only a space of a few square feet left in the room. This he has wisely retained for the storing of future issues of "Plumber and Steamfitter."

## Chronologically Speaking.

John Marshall was born in Glasgow, Scotland, in the year 1876. At the age of 17, he came to this country and made Toronto his home. He learned his trade with John Ritchie and among the other apprentices there at that time were Bob Yeomans, now alderman of Toronto, Jack Hainsworth, now of Berlin and Charlie Hicks, now of Toronto. He worked afterwards for Bennett and Wright and also for Purdy and Mansell. Then he went into business for himself and eventually went out to Port Arthur.

Jack Marshall is a strong believer in

association work. He has been vice-president of the Ontario Society of Domestic Sanitary and Heating Engineers, chairman of the Apprenticeship Committee and is now chairman of Examination. He likewise fills the post of chairman of the Essay Committee of the Canadian Society. He has been secretary of the Port Arthur association since its organization.

Four years ago, he was selected as a member of the Port Arthur Board of Health and sat as a member of that body for three years. Deciding that this post did not give him enough scope, he went out after greater honors and was elected alderman at the first of the present year. Impartial opinion has it that he has been a pretty good alderman and he is likely to retain his seat, until such time as he is elevated to the mayor's chair.

However, this brings us to the end of our space. And not a word has been said about that watch episode! Oh well the story is rather old now, anyway.

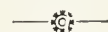


## HOW LONG IS A WIPED JOINT.

Editor Plumber and Steamfitter. — Tell me how long a wiped joint is generally?

Apprentice.

It differs some in certain sections, and runs from two to three inches, depending upon what connections (on small pipes) are made, and also the fancy, ability and shape of the plumber's hands. Generally speaking, we should say that most plumbers prefer a small joint, to be about two and one half inches in length.—D. C. H.



## MEASURING PIPES AND PLANS.

Editor Plumber and Steamfitter. — In working on either a plumbing or heating job about how many measurements should a man take at a time before he gets out the work? What is considered a fair average under general conditions?

Fitter.

There are some jobs that can be laid out so that nearly all the measurements can be taken before a pipe is cut. Others can not. Even if a man is a good workman, he must accustom himself to getting out his work in this manner, which has become much more common of late years. We believe that he should be able to take from 6 to 10 measurements and be reasonably sure they'd come right. He can't always do it, but he should be competent, so to do if occasion requires.—D. C. H.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## GAS RANGE WORKS POORLY.

Editor Plumber and Steamfitter. — The gas stove (shown in Fig. 3) does

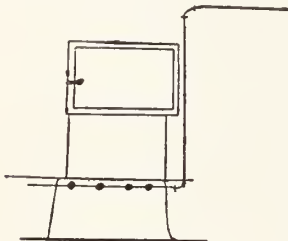


Fig. 3.

not work well. At times it sputters—so to speak. It is connected from the ceiling down as shown. Suggest remedy. K. G.

Take the connection (as shown in Fig 4) from the bottom. There is more or less moisture in the gas, and the way you have it fixed any moisture will

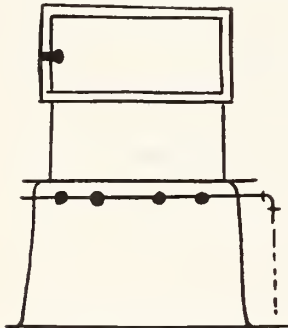


Fig. 4.

make the stove do just what you say—"sputter."—D. C. H.

## HOT WATER PIPE SIZES FOR RADIATORS.

Editor Plumber and Steamfitter. — In installing a straight hot water open tank system, how much radiation can be supplied by risers of 1 inch, 1 1/4 inch, 1 1/2 inch and 2 inch sizes?

P. I. P.

Any fitter of experience will recognize the inability of any person to answer accurately. The jobs vary so that it is impossible. We have put 40 feet on a 1 inch pipe, and seen it fail.

We have put 120 feet on a 1 inch pipe and had it succeed. It depends upon the circulation, and common sense of the designer of the job, and also tank pressure. Generally speaking, from our own experience we should say as follows:

1 inch, from 30 to 75 feet; 1 1/4 inch, from 75 to 125 feet; 1 1/2 inch, from 125 to 160 feet; 2 inch, from 160 to 200 feet, governed by circumstances. Some will go less, others more.—D. C. H.

## CEMENT FOR SOIL PIPE.

Editor of Plumber and Steamfitter. — Some time ago I saw an item in your paper telling about soil pipe cement that would make a tight joint. What is it. where can it be got and how do you use it?

"Kingston."

A good cement can be made of litharge and glycerine. Mix to a stiff paste and apply by your hands or a flat knife. There are good iron cements constantly advertised in the papers. Write to any of these and receive full instructions, or drop us a line and we will give you some addresses.—D. C. H.

## HOW HIGH SHOULD KITCHEN SINK BE SET.

Editor Plumber and Steamfitter. — I have had an argument with one of my plumbers over the right height to set a kitchen sink. He claims that the sink should be set 2 feet and 6 inches, and that it is always right when so set. I would like to have your views upon the subject in the next issue of your valuable paper.

H. P. Leonard.

That plumber was one who was satisfied to so set sinks "just because Dad did it that way." For years and years in all parts of the country plumbers had been contented to set sinks at one height, 30 inches, and no one could really give one sane reason for it. Thus the high woman and the short woman were equally discommoded, persons of medium height being the only gainers. In rented buildings, of course, some uniformity must be had, and 30 inches is probably as good a standard as any

other measurement. For women from 5 feet 6 inches to 5 feet 10 inches the sink should be placed at 36 to 38, and in some cases 40 inches high. There is neither sense nor policy in rigging a sink so that it will be a back-breaker for the woman who must use it several times each day for years. Adjust your sink to the convenience of the customers and you'll be thanked for it many times.—D. C. H.

## COIL ON CEILING INSUFFICIENT.

Editor Plumber and Steamfitter. — An office is heated by a coil located on an inside wall. If we could have a radiator at point "X" I am sure much bet-

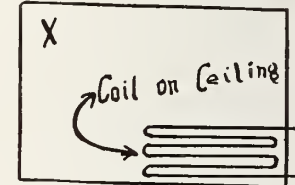


Fig. 1.

ter heat could be thrown into the office. It would have to stand at the same level as the boiler. Could this be done?

J. D. Ferrow.

We show a hasty sketch giving you the idea. Tap out the flow pipe about six to ten inches below the water line,

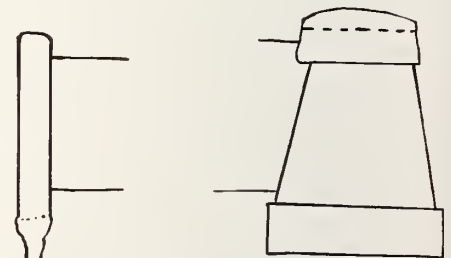


Fig. 2.

and connect to radiator flow and return as shown. You will have a hot water radiator that will heat even though the rest of the job be a steam job.—D.C.H.

# Practical Pointers on Comfort Stations

Some of the Fundamental Principles of Design—Various Types of Fixtures Recommended for Use in Comfort Stations—Advantages of the Fixtures Mentioned.

THE following paper was read at a meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, by W. E. Hinsdale:

The first comfort station in my memory in this country I saw first in New York City in 1876. It was for one purpose only and it was made by an English firm. I can see it now in my mind's eye. A thing of rough iron work, above ground, poorly screened, curvilinear in shape, and reminded me of the mazes we used to draw when children on scraps of paper to while away the time. One could always find it just by following his sense of smell. It, however was a start and, by its own ugliness and insanitary features, forced on the public the necessity of improvement.

A resume of the advance made since that time would be useless and I will bring my remarks up to date and call your attention to what I can consider the necessities of such installations.

## Difficulties Due to Carelessness of Users

The first matter to be considered in specifying fixtures and buildings for public use is this fact. The great majority of the users have and will take no interest in the care of the accommodations furnished them. They have no sense of ownership; in fact, seem to think that it is up to them to appropriate anything that can be detached.

Next, consider that the class of employees who can be secured to care for these places are generally of a low order and no matter what the regulations are, will not keep fixtures in proper shape. Then consider that the location of public utilities of this class are always put as much out of the way as possible; frequently, indeed, in the majority of cases, they are placed underground and that moisture is always present in the rooms to the detriment of anything in the line of wood work or high finish.

With these points in mind the engineer will see that he must eliminate all superfluous finish and parts and install fixtures that will, as near as may be, take care of themselves.

In making the specification for the fixtures for all the stations on the line of the New York Subway the engineers had some of the foregoing ideas in mind but at the same time did not get all the results desired for the reason that experience with the public in the use of high grade sanitary appliances was, to say the least, young. They have found to their regret that the highly finished

parts that could be removed disappeared about as fast as they could be installed. They have found that pay rooms were the play of the users unless some one was constantly on watch. They and the author, however, have gathered valuable experience and without further reference I will give you in few words my ideas on the class and style of fixtures and surroundings needed in comfort stations or places where the care of them is largely up to the general and careless public.

## Important Features of Construction.

Avoid at all times high finish on any metal work. Galvanized iron pipe work and brass work that has had only the first smoothing to take off the sand surface should always be used and painted with good enamel.

Avoid woodwork of all kinds. Use only marble, slate or glass. Keep partitions off of floors. Doors are not required for stalls. If, however, they are used they should be of galvanized iron and painted with white enamel. Floors should always be made of non-absorbent material. Concrete is not as good as asphalt. The floors should be made to drain to large floor drains having removable covers. The entire room then being so designed as to be readily washed down with a hose.

## Type of Fixtures Recommended.

As to fixtures, all closets should be without wood seats. The rims should be made seat form and integral. The class of closet may be either washdown or syphon. Washout should not be used. No closet with contracted passages should be used. My own idea of a closet is one of heavy vitreous ware, with the floor flange carried back to wall and extending up on the wall to the height of the closet covering all connections; or, a more modern closet, that is attached to the wall and free from the floor. In either case there is no space around the closet to collect dust and in the case of the closet attached to the wall and free from the floor, there is no place for cleaning that cannot be reached by a mop.

## Concealed Connections Favored.

The flushing of the closet should be by means of a push button through the rear wall operating either a flushing valve or a cistern, the rear wall of stall being far enough forward of the building wall, or when in double battery the rear walls of stalls being far enough apart to allow of easy access to fittings.

that in such an installation are entirely out of the reach of the user. An installation of this kind would present to the eye of the user nothing but a heavy piece of vitreous ware and a button in the rear wall.

I do not approve of automatic fixtures of any kind, as experience shows that they are continually getting out of order. You can depend on the user flushing the closet or your attendant will see that it is done.

## Style of Urinal Suggested.

The best type of urinal for this use is the porcelain stall extended down and into the floor. The cheapest of the class are those placed between marble or slate partitions and may be had in white and in buff ware. The should always be made with integral drip lip and the floor sloped to the urinals, forcing all spatter to flow into the receptor of the urinal.

There are various types of urinal stalls made meeting the requirements. Partitions may be had of porcelain in some of the styles; again, they may be made to be placed without partitions but with extended sides and to set free.

The flush should be the same as suggested on the closets, namely, a cistern or flushing valve out of the user's reach and a push button through wall and above the stall.

## The Lavatories and Sinks.

The lavatories should be of vitreous ware of the plainest pattern and set free from the wall or with integral back against the wall depending on conditions. A compact fixture presenting the minimum of metal work above the base should be used and all fittings below the basin made up as close and permanently as possible and of a finish suitable for painting. The supply of course should be self-closing. I would use an open outlet, the water wasting as fast as used.

Slop sink for porters' use should be placed in a separate room and not where the public users can get at it.

The matters of ventilation, back air, sewage disposal, etc., are not within the province of this paper. The ideas given are on those parts of the work that the public sees and uses.

## The Fundamental Principles of Design.

As a resume of this paper, I would sum up as follows: Make simplicity the prime factor in fixtures and surround-



ings; make solidity of appliances an imperative factor; make the removal of parts as hard as possible; make cleaning

with the least amount of labor the dominant feature. With these ideas accomplished, you will have made the cost of

upkeep a quantity more nearly proportionate to the efficiency of the installation.

## Waste Fittings for Water Closets

THE following article by R. M. Starbuck appeared in The Plumbers' Trade Journal:

In Fig. 1 we show the floor plan of a toilet room in which a group of water closets is arranged in such a manner and at such a point in the toilet room that this special waste fitting may be used to advantage.

We know of no other way than by the use of this fitting, in which such a group of water closets could be properly connected when located as shown in Fig. 1. The use of space in this manner in the case of a large toilet room is often very advantageous and a matter of economy in space as well.

The vertical line of pipe out of the top of this waste fitting, when used as a main vent or connected into a main vent, acts as a perfect vent for the entire group of closets, and in doing this work calls for no outlay of labor or material in the work of venting, saving thereby a considerable sum of money which under ordinary conditions would

have to be laid out for that part of the work.

Possibly no special fitting that we have shown is so good an example of the saving in labor that may be effected by the use of many of the special fittings as the Octopus fitting which we showed in the preceding article and again in Fig. 2 of this article.

In Fig. 2 a method of ventilation for the group of water closets is also shown. The fixtures shown are of the raised rear vent type, each through its vent being connected into the ventilation space or chamber which is at the centre and back of the group of water closets.

The soil pipe, it will be noted, is extended up to the floor of the toilet room so that a cleanout may be made accessible. In Fig. 3 is shown a special form of this waste fitting for use in connection with a group of water closets which are exposed to the cold and must be made proof against frost. This necessitates the use in connection with each

closet of a separate trap located in a pit.

The connections for such a group of closets is to be seen in Fig. 3, and in Fig. 4 a plan or top view shows more clearly the manner in which the traps are connected into the waste fitting.

The special fittings which we have shown in these three articles for the service of water closets under varying conditions are only a partial list of those which may be obtained, and it must be granted that they have done a great deal toward providing well-nigh ideal possibilities in the installation of this fixture.

The water closet, however, is not the only fixture that has been benefited by the introduction of special waste and vent fittings. The appearance of a large part of these fittings is of comparatively recent occurrence, dating back only a very few years. It is hard to account for the fact of the sudden appearance of so many special fittings after so many

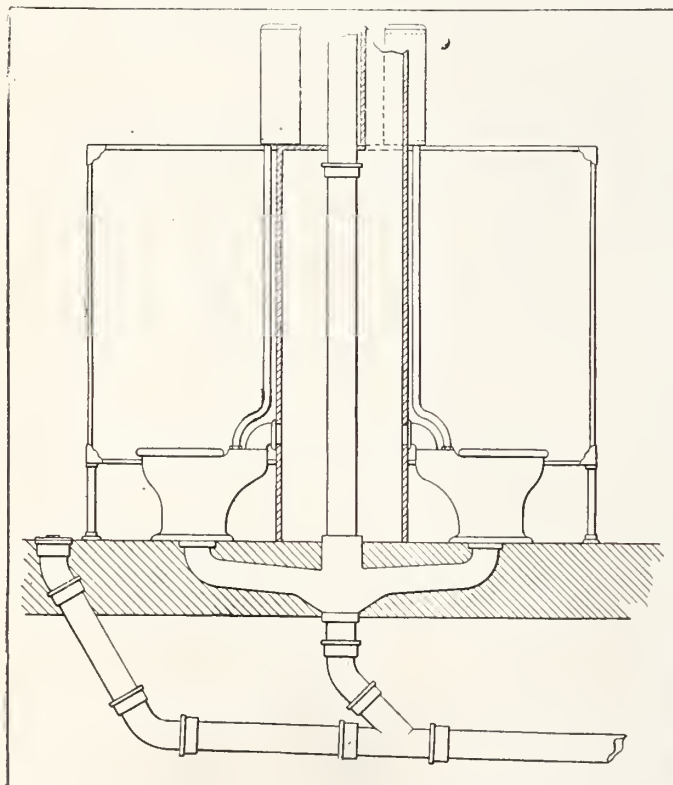


Fig. 2.—Octopus waste fitting serving a group of eight water closets.

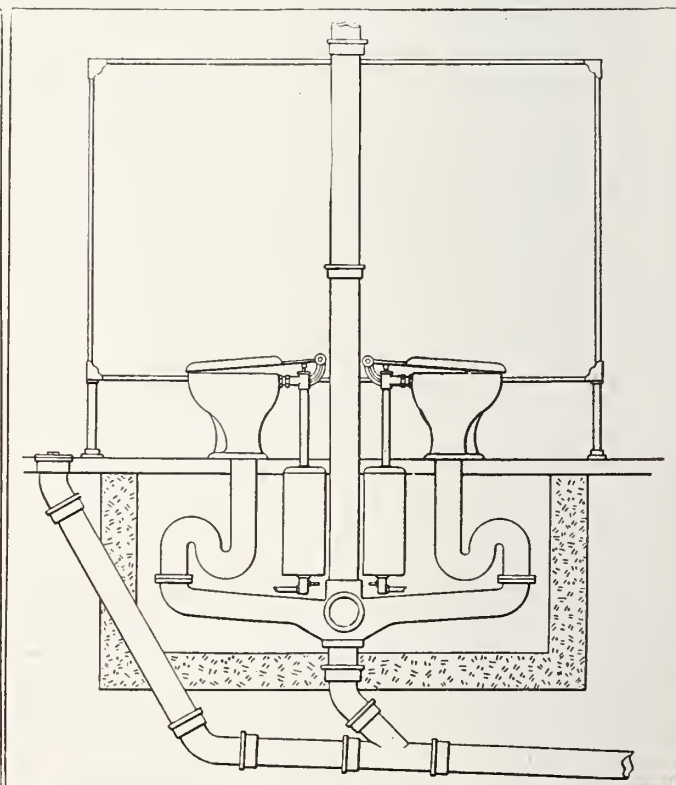


Fig. 3.—Group of frost-proof closets entering Octopus waste closets.

years when nothing but the old-time fittings was made use of.

The improvements doubtless came as a part of the evolution which everything concerning the plumbing system has undergone in recent years, but if there is one thing that has stimulated the perfecting of waste and vent fittings more

provement of house sanitation as anything that the writer can recall.

the past several times, it cannot be applied in the use of the full S or three-quarter S traps. This fact has put a restriction on designing that has had to be observed strictly. Thus, in Fig. 6, the special waste and vent fitting is made in the form of a double T-Y, and not in the form of a double Y. If it had been made in the latter form, it would have violated the principle on which the continuous vent acts.

Another point which may well be emphasized is the fact that the employment of the principle of the continuous vent in addition to its many other advantages effects a great saving in labor and material. Such saving is shown in connection with the work in Fig. 6, and it becomes more obvious when we compare such work with the work as ordinarily constructed and shown in Fig. 7. The latter work, to accomplish the same results as Fig. 6, requires considerably more stock and labor and when complete is not nearly as perfect a job as in Fig. 6.

In conclusion, we would say that there is no question that the use of special fit-

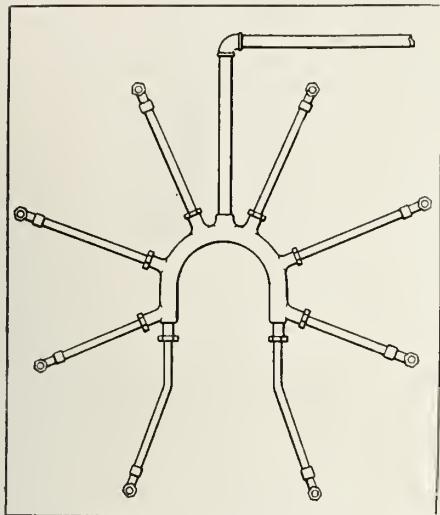


Fig. 5.—Method of supplying water to closets on Octopus waste fitting.

than another it seems to us it is the introduction of continuous heating.

Along with this possibly went the purpose on the part of the designers of fittings to obtain for each fixture as far

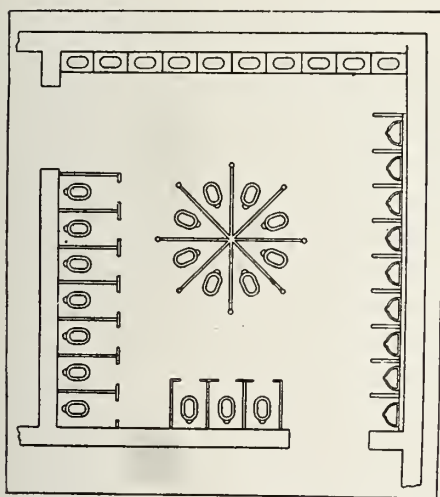


Fig. 1.—Toilet room with group of eight closets in middle.

as possible separate entrance into the drainage system.

Separate waste entrances for fixtures and the use of continuous vents are two improvements which have come to plumbing construction in recent years, which have meant as much in the im-

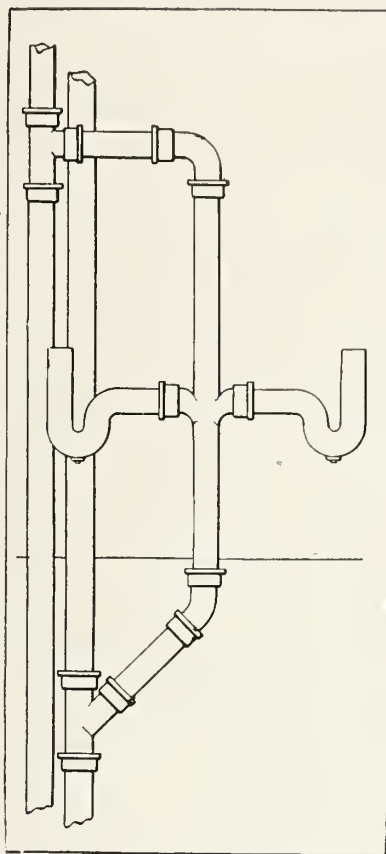


Fig. 6.—Advantages of Continuous Vent fitting.

It may be of interest to note how continuous venting placed certain restrictions upon the designing of many of these new waste fittings. In the first place, the continuous vent principle can be applied only when a half S or P trap, or a running trap, is used.

From the very principle of the continuous vent, which we have shown in

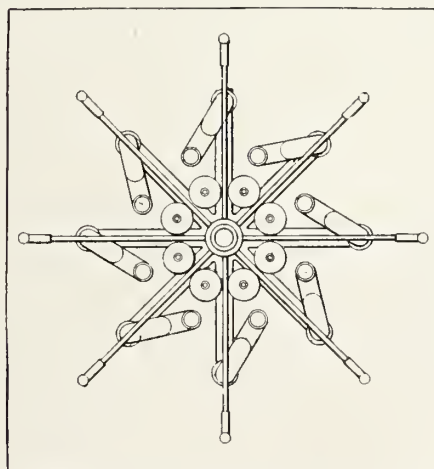


Fig. 4.—Plan of eight frost-proof closets entering Octopus fitting.

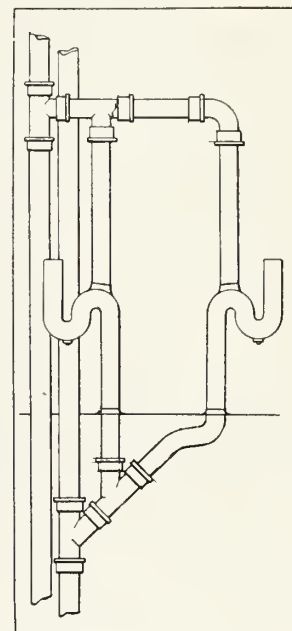


Fig. 7.—Work shown in Fig. 6, done by ordinary methods.

tings for special purposes and in special places is on the gain and wherever practised must inevitably add effectiveness to the plumbing system, for it is to be expected that the use of fittings made for specific purposes and conditions will produce better results than the use of fittings designed for general use.



#### Firm Have Moved.

London, Ont.—Wm. Skelly has moved to his new store and shop at 242 King Street.



# Methods of Sewage Disposal

## Septic Tank for a Manufacturing Plant.

As an example of a relatively small application of the septic tank principle of sewage disposal, the accompanying plan and elevation of a system installed for the purification of sewage from a colony of buildings forming the plant of a new hydraulic machinery company, will be of no little interest.

The site of the plant comprises about 15 acres, with drainage to a creek passing through the rear of the property. Owing to the lack of outside sewerage facilities and restrictions against the disposal of crude sewage into the creek, the septic tank was installed. While no figures are available as to the number of people employed about the plant, it may be stated that the buildings cover less than half the area of the property.

The sewage from the works is collected into the receiving tank shown in the drawing, from which it is automatically lifted into the septic tank proper by means of an Ellis automatic sewage lift. The different sewer mains deliver into the receiving tank at points about 4½ feet below the general level of the shop floors. The tank and its accessories were built to be as little exposed to the weather as practicable and yet not involve too much excavation, and the top is only about 18 inches above grade level. In order to keep the tank itself

properly filled without interfering with the proper drainage in the sewer mains the sewerage lift was employed, and this is located in a pit that is 10½ feet deep so as to bring the lift below the outlet from the receiving tank. As it is arranged to work automatically according to the level in the receiving tank it provides that the sewage is taken care of without overflowing from the receiver, although as shown in the drawings a by-pass is provided so that if it should become necessary the sewage could be discharged to the stream without special purification.

As shown the septic tank proper is 6 x 20 feet in area, and the sewage is held at a depth of about 6 feet 3 inches. The outflow from the tank is obtained through a 6-inch tile pipe, and the inlet to this is some 3 feet below the surface of the sewage, as shown in the section, this provision being made to avoid disturbance of the scum which forms on the surface of the liquid. The liquid from the tank reaches a filter bed, where the bacteriological processes begun in the septic tank was completed before it finds its way to the brook through the basin at the end of the filtering chamber. The filter as indicated, is composed of slag, or broken stone, spread over the bottom of the bed to the depth of about 1 foot.

The septic tank operates in brief as follows:—It is designed large enough so that the sewage on passing through it has a slow current. This gives ample opportunity for the anaerobic bacteria to multiply at a very high rate, providing the temperature of the sewerage is not too low. Decomposition is then effected. The septic tank should then be covered, not only to shield the contents from light and air, but to maintain as high a temperature as possible. To prevent a disturbance of the scum it will be noted that the inlet is below the surface, as is the outlet, which as stated, is taken at a point 3 feet below the surface.

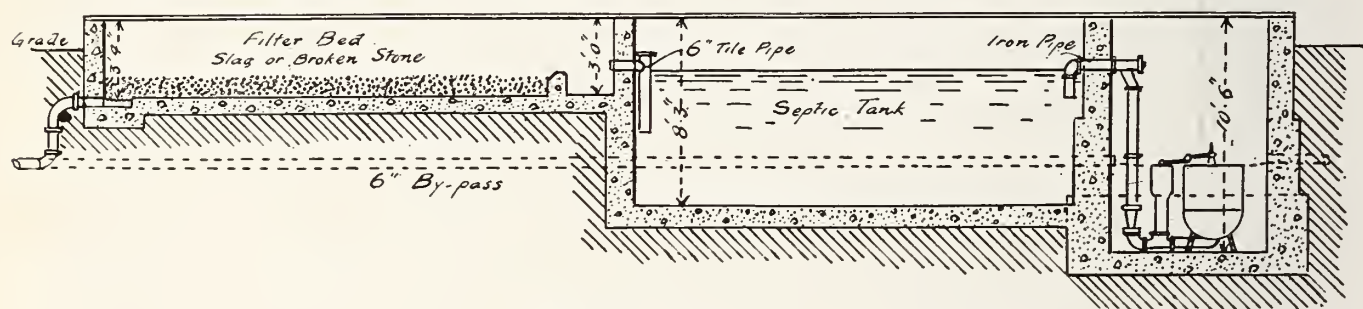
The tank is built of concrete, and the septic tank proper, the receiving tank and the filter bed were all built as one structure.



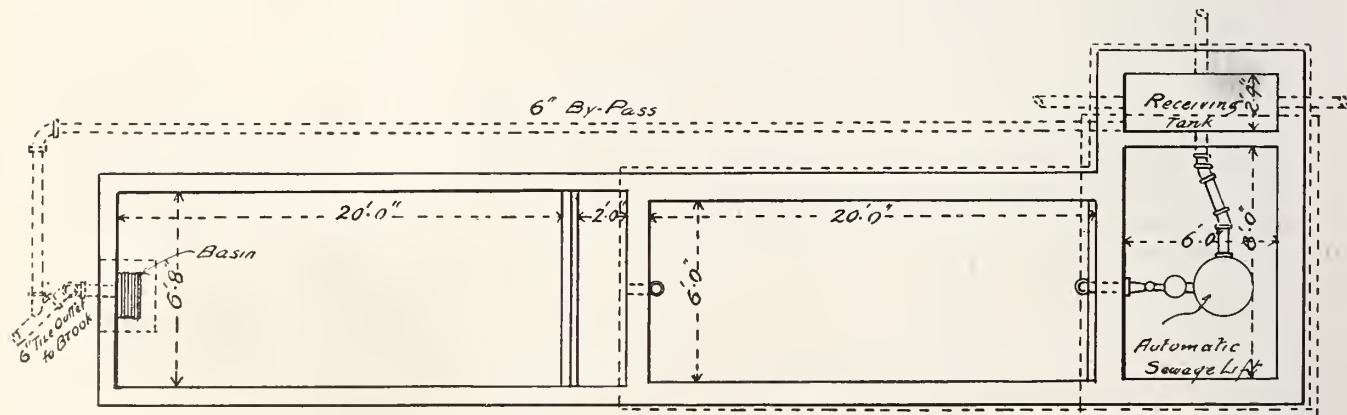
## Going to Calgary.

James Ballantyne, president of the Montreal Builders' Exchange, leaves very shortly for the West, where he will attend the convention in Calgary. He will visit also Winnipeg and Saskatoon.

R. Meadowcroft, president of the Montreal Plumbers' Association, is going to the Calgary convention. He will, however, likely leave for the West before the majority of the delegates.



SECTION



# Tips for Helpers---By "Phoenix"

The rising generation has got such a "bump" that it is almost useless to offer any advice or hint. About the only way these youngsters will ever get wise is to get more bumps and then some, after which they will get to about the usual human understanding.

Advice, anyway, doesn't generally count for anything even with those who are much older than a helper, but in the hope that a few hints thrown here and there along the path that every helper must tread ere he becomes a full-fledged plumber or steamfitter may prove useful, these articles are written. If you follow one half the points mentioned, you'll eventually be a diamond in the rough. The fine polishing will be developed by the brushing received from business associations.

## Chapter I.—The Time, Place and Boy.

In former years a helper had to be most a "white hope" in order to be a candidate for the helper's job. It didn't much matter whether or not he had any brains, but beef to the heels he positively must be. Perhaps that's one reason why we now see so many middle-aged plumbers running shops with more brawn than brains.

You don't have to yank on the stocks nowadays until you see a million or more stars and comets dancing before your eyes all around the cellar. We will discuss the boy first. He can't be a bunk-head. The time for that has gone by, and—as I have hoped you'd infer from my previous remarks, he can be, well somewhere between 135 and 155 pounds in weight, and a good digestion apparatus attached and in first class working order.

"Lou," if your health isn't good, for the love of Mike, don't try to become a steamfitter or plumber, for you'll only develop into a grouchy, cranky, nervous guy that couldn't hold a job for keeps to save his bacon.

If you are rather slight, or shy on weight you can't develop yourself by acting as if you possessed just a fraction of horse sense. Cut out the cigarettes. Smoke good tobacco or none—you'll have the boss asking for some, may be, and it's well to have a stand in there. Take it from those who know.

A boy should be anywhere from 17 to 20 years of age when he starts to learn either of these trades. The more education he has the easier things will come. That is if it's the right kind of an

education. Perhaps I can best illustrate this by an incident. In one of the shops we had an old steamfitter that we called "Holy Smoke." He was a rough old brute and anything of the nature of a dude got Holy Smoke's goat instantaneously. One day about 8.15 a.m. the boss came back into the shop, and trailing behind was a fairly husky young freak with turned up cuff pants, crush hat and all the fixings that go along. "Here, Smoke," said the boss, "is a new helper for you. Break him in." That dude kid just stood around puffing on a "coffin nail" until "Holy Smoke" lost all patience. Grasping the dude by the neck and heels he took him to the back alley and, doubling him up, thrust him into the rainwater barrel. If that boy had had a practical education or parents that had common sense, you can gamble that he'd never have appeared in the shop in the clothes he wore, and he would have had brains enough to know that work was expected, not fashion plate looks.

Most shops to-day are greatly improved from the dusty, dirty, ill-lighted and unsanitary holes in which the craftsmen were obliged to labor years ago.

A good strong working suit, overalls and jacket and a cap. A Cady is no good. Likewise a Rough rider. A cap is handy, fits tight and keeps the dirt out of the hair. The overalls to be changed every week. Grease and dirt all over your person and clothes will never make a mechanic of you. Perhaps you are ready to start in the shop now. I wouldn't get there too early, or some of the other helpers may get sore and knock you. On the other hand don't be late. If you can get the habit of arriving about ten or fifteen minutes ahead of your fitter boss (in case he always shows up at the right time) you will make a hit all around. The sooner you learn just what to do, the easier it will be for both you and the boss.

He will tell you once, twice, perhaps three times, and (if he is easy and good-natured) maybe four times about what he wants. Say! If you are a twentieth century boy you ought to gather some ideas by that time. You have the tools, the chest and the stock of fittings, etc., for the job in hand to look after. I suppose you don't know the names for the fittings. How are you going to

learn? There are several ways. Look over the boxes, or cases where they are stored, and see how they are marked.

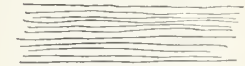
Ask an occasional question. Get some catalogues and you can turn to pages where all the fittings are illustrated and named. It won't take you very long to learn the name of every fitting so that you can easily pick it out from among a dozen different kinds if put to the test.

Then the different tools. The fitter will undoubtedly tell you their names as he shows you how to use them on various jobs. He expects you to take good care of this chest of tools. Keep the chisels ground to edge, the saws sharpened, the stocks and dies cleaned, the wrenches with jaws unbroken, the tills in chest not lumbered up with a useless lot of odds and ends that are forever and ever accumulating. The chest will be heavy enough, do the best you can. Endeavor to lighten it, and not to add to its weight.

The shop you should join is one that is progressive. It may not be the largest in the town or city, but try and get in with a man who has ideas and who is known to do honest work, and, above all, one who makes money. They are hard to find in this business as you'll learn later.

I'm going to pause right here and give you a tip that will be worth a good many hundred dollars to you if followed up. I can not give a whole series on drawing, because there are too many other points to be talked about; but I am going to give you a start. You take a pencil and paper—later pen and paper and practice drawing. Do so at night, in the quiet of your room.

*First Shot Try  
Drawing a Straight  
Line*



*Perhaps after trying  
50 times you will  
get one just right.*

Not one plumber in ten can draw. By so doing you will be better than nine other men when you get your card. I just enclose a few drawings and remarks. Go to it, Lou. If you can beat it, you got a good start on the old ones.



# Complete Course of Sheet Metal Work

By L. W. KOSER

In problem 19, plate 17, Fig. 1 A, B, C, D, represents a collar flashing around a pipe going through a pitched roof.

What we want to develop in this case, is the opening H, Fig. 3, so that will fit close to the pipe when the collar A, B, C, D, is set at the angle shown by Fig. 2.

First draw the elevation Fig. 2 having the line P.P. equal to the diameter of the desired pipe, and the line S, S, at the desired pitch, and equal to the length of flashing wanted.

Then draw Fig. 1, which is a plan view of the pipe and collar as it would appear if seen from above.

Then draw the outline N, M, R, S, of Fig. 3, having N, M, and R, S, equal to the line S, S, of Fig. 2, and the lines N, R, and M, S, equal to A, D, and B, C, Fig. 1.

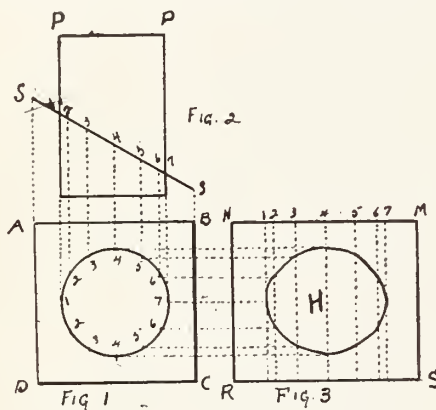
Now divide the circle of Fig. 1 into equal spaces and project lines from each point up to the line S, S.

Now, place one point of the dividers at S and the other point at I, Fig. 2, and transfer this distance to the line N, M, Fig. 3, as N, I. Transfer the spaces 1 to 2, 2 to 3, 3 to 4, etc., from the line S, S, to the line N, M, until all the spaces are transferred, and draw the usual measurement lines.

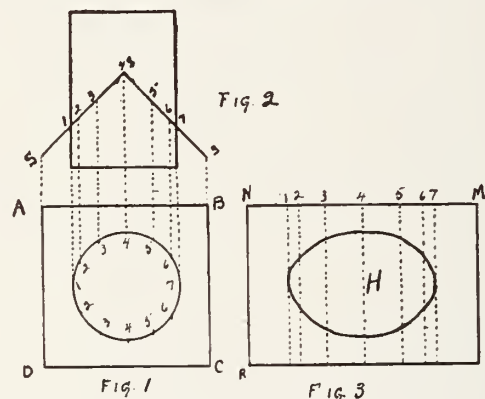
Now place the T-sqr. parallel to the line N, M. Bring it against No. 4 on Fig. 1 and cut No. 4 measurement line on Fig. 3. Then bring it against No. 5 and cut lines 3 and 5, then against No. 6 and cut lines 2 and 6, then against No. 7 and cut lines 1 and 7. Trace a line through the points of intersection, and develop the other half of the pattern in the same way.

In problem 20, Fig. 3 is a collar flashing to fit over a pipe going through a ridged or double pitched surface, the method of developing being the same as explained for Prob 19.

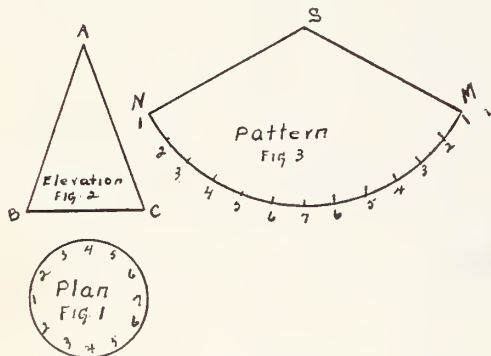
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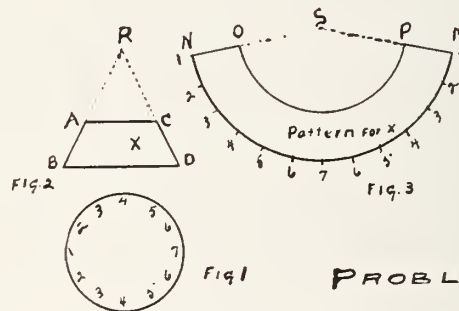
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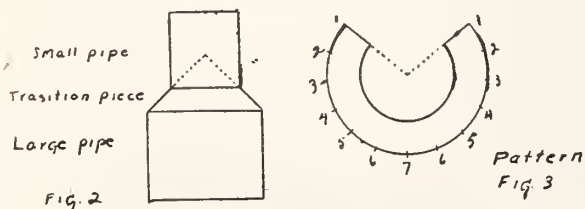
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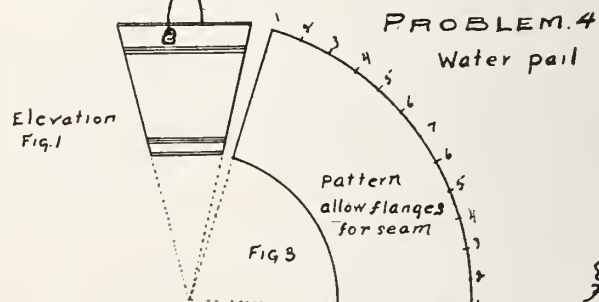
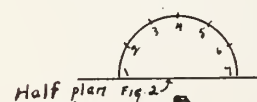
CONE SHAPE OR FLARING WORK  
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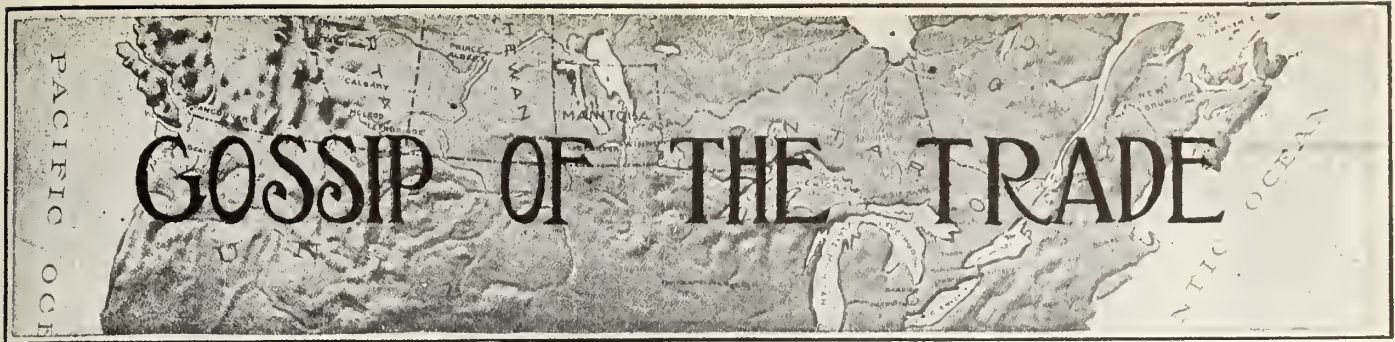
FRUSTUM OF A CONE  
PROBLEM No. 2



PROBLEM No. 3  
TRANSITION FROM LARGE  
TO SMALL PIPE



PROBLEM No. 4  
Water pail



#### **J. K. Knaus Dead.**

Beausejour, Man.—The death is announced of J. K. Knaus, tinsmith.

#### **Starts Business.**

Pelly, Sask.—Chas. D. Hubert has started in the tinsmithing business here.

#### **Fell 25 Feet.**

Toronto, Ont. — Thomas Ashton, a plumber, 33 Hocken Avenue, fell twenty-five feet yesterday at the new Woodbine Hotel, and sustained injuries to his head. He was taken in Harry Ellis' ambulance to Grace Hospital.

#### **Help is Scarce.**

St. John, N.B.—At present local sanitary and heating engineers are experiencing a good deal of trouble owing to a scarcity of help. There is a great deal of work to be done, and the journeymen to do this do not seem to be in the province. The rush West has done some harm in this respect.

#### **Strike at Windsor.**

Windsor, June 26.—At a joint meeting of the employers of Windsor and Walkerville, held this morning, it was unanimously agreed to refuse to concede the demands of the striking plumbers, and as a result building operations throughout the city will be practically tied up. The employers in a public statement of their side of the case declare that they will decline absolutely to accede to the proposals of the strikers.

#### **President Cannot Play.**

Already there is a sad blow for the rooters at the baseball match which is scheduled to come off at the Calgary Convention. J. E. Walsh, the president of the association, has recovered from his recent injury, and will be able to attend the gathering, but he says he will not be able to play ball.

That is bad reading. Do you remember how the president cavorted on the diamond at Fort William—How he landed on the ball, and how he emulated the famous Ty and slid home?

That slide was some event. Mr. Walsh probably intended to skim gracefully over the ground in carpet-sweeper fashion. But the plans went wrong and he travelled most of the distance from third base to the plate with his face scratching on the dirt.

It was great baseball but hard on the face.

However, the recent injury to his arm has put baseball on Mr. Walsh's Indian list. He will be numbered among the rooters unless he gets up courage to umpire.

#### **Holding Big Picnic.**

Toronto, Ont. — All arrangements have been completed for the big picnic of the Toronto Association of Sanitary and Heating Engineers at Guelph on July 6. The special train will go C.P.R. direct to Riverside Park in the Royal City, and it is certain that a large crowd will go along. Most of the members are taking their wives on the outing. A very low rate, 1.05, has been secured by the committee. A feature of the afternoon's programme will be a baseball game between the masters and the travelers. The teams have been selected with great care, and it should be an exciting game.

The members of the committee in charge are J. H. Warwick, chairman; W. Schultz, secretary, Walter Boddington, E. T. Needham, T. Maxwell, G. F. Frankland, Geo. Cooper, A. H. Reid, A. F. Passmore and H. G. Waterman.

Quite a few men from outside points have signified their intention of going along.

#### **A Drowning Accident.**

Vancouver, B. C. — George Mortimer, a well known Vancouverite, member of the plumbing firm of Mortimer Bros., met death Saturday evening near Eagle Harbor in Howe Sound.

He was on the yacht Volage with a party of friends. Their engine had stopped on account of some trouble and their craft was moving very slowly under sail, there being a very slight wind. The dinghy got adrift, and Mr. Mortimer, taking off his shoes, leaped into the water and started to swim for the loose boat. His idea was to get in and row to the yacht, his action being taken to avoid loss of time for the larger boat. The latter rounded a point and lost sight of Mr. Mortimer and the dinghy. A little later a launch came up with the yacht. The launch was towing the lost dinghy, but saw nothing of Mr. Mortimer. Search was made, but no sign of the body could be found.

#### **A Great Game, This.**

"Pard" writes the following account of a baseball game at Saskatoon:

Was it cricket, baseball, or what? It must have been an athletic contest of some kind, for there were points scored. On Saturday afternoon, when most law-abiding citizens were busy earning their daily bread, eighteen stalwart baseball players, headed by "Big Chief" Von, made tracks for City park. On arriving at the battlefield, the men doffed their coats and hats, making bases of the former. You remember your school days. Well, nine of these braves were plumbers and nine were master plumbers, who had trotted out to the park to play for the plumbers' championship of Saskatoon. Biff! bang! bang! The players of both nines possessed exceptional batting ability, which would have belittled Tyrus Cobb, Lajoie, Hans Wagner, "Home Run" Baker and others. The teams played for seven innings, during which many new stunts were introduced with the grand old game, which resulted in a win for the plumbers by a score of only 30 runs to 25. Before the score feast, it was decided to play nine innings, but Arbitrator Von, out of compassion for world's records, prevailed upon the desperadoes to call off their dogs at the end of the seventh. Now, with the score 30 to 25 after six plus one innings, what would it have been had the game gone the limit?

#### **Must Have Permit.**

Kerrisdale, Point Grey, June 10.—H. S. Jones, of Vancouver, was before Reeve Harvey, at the instance of Plumbing Inspector Hughes, on Saturday, charged with installing plumbing without having taken out the necessary permit.

The accused raised the plea that he could not file a plan for the plumbing because he did not know what was required to be done in the house. It was not finished, he said, and could not be used, but he sent for a permit on Friday, when the work was ready and was refused.

The reeve quoted the by-law to the effect that before proceeding to construct any such work a permit must be obtained.

Accused admitted a previous conviction, and was fined \$10 and \$4 costs.

#### **New Plumbing Firms.**

The Central Sanitary and Heating Co. have started business at Saskatoon.



Best Wishes to New Firm.

Saskatoon, Sask.—James Brady, of Local 264 Saskatoon, has taken his withdrawal card and started up in business in this town.

Bro. Brady has for some time past been a prominent and earnest worker in local labor circles.

He joined Local 221, Kingston, Ont., in 1905, and shortly after went down to Oklahoma, where he located at Chickasha, Local 381, and there he ably assisted in the work of the local, and occupied the position of vice-president for three years.

He came up to Saskatoon in 1911, and has been vice-president of this Local, delegate to Trades and Labor Council and member of various committees and has admirably fulfilled all the duties undertaken.

At the regular meeting of 264 May 1st, the boys accepted his resignation with regret, and unanimously tendered him their sincerest wishes for success in his new venture, and his numerous friends and acquaintances will certainly concur in these sentiments.

He has opened in partnership with Bro. N. Beaton, another veteran, and if the two make as good bosses as they have been workmen, they should never have far to look for workers and work.

The title of the new firm is the Central Sanitary and Heating Engineering Co., address 314 1st Ave, North Saskatoon.



THE MAIN LEAKS BY "FITS AND STARTS."

Editor Plumber and Steamfitter. — I have got a steam main on my hands that leaks by "fits and starts." Every man in the shop has had a whack at fixing it. Tried it myself with the same result—still leaks. It will work all right and tight for a spell and then start to leaking. After a while stop and then leak. Can you put me next as to how to fix it and have it stay tight all the time?

C. J. Town.

In view of the attempts mentioned we could not say that no one knew how to caulk the pipe. We should suggest looking for the trouble along some other line. The second or third attempt should have shown you that there was some force which ruined the caulking. That force is expansion. If you look the job over carefully, we believe that you will find that proper provision for expansion has not been made. See to it that the expansion is all right, and the chances are that the leaks will "take up" themselves or at least with one thorough caulking.—D.C.H.

# Plumbing and Heating Markets

## MONTREAL.

Montreal, June 14.—The scarcity in supplies, which was reported a fortnight ago, has not improved, but has rather become more acute. The demand for many lines has been exceptionally large. Soil pipe, for instance, is being ordered as never before at this time. A representative of a Winnipeg concern was in the city only this week, endeavoring to contract for a tremendous supply. And they were successful, being given three days' output every week of one of the largest manufactories.

Other goods, too, are being ordered largely. Early though it is, boilers and radiators are in demand. Dealers remember the situation last year. They can see from the amount of building which is going on that they will be called upon to equip many buildings, and they are therefore placing their orders early. They are taking no chances of running short of supplies.

### Heating Goods Advance.

Heating goods are among those which have advanced in price. Soil pipe, too, has risen, as has lead pipe. Present indications are that the latter articles—the soil pipe and the lead pipe—will rise still more before many days pass. Lead, owing to the closing down of the works in British Columbia, is almost impossible to secure. Stocks are exhausted, and the makers of lead pipe are naturally finding the cost of production more. What new lead they are using they are bringing in from England at the existing high rate.

Enamelware.—Here the demand is keeping up well, though of course it is a little early for the real rush. It is fortunate that this is so, for the reserve supply on hand at the present time is not as great as could be desired. The amount of goods needed in a month or two is evidently going to be great. Manufacturers are now wondering if they will be able to meet this. One thing is certain, that is, that they will face great difficulties unless the car shortage is relieved.

Soil Pipe.—As has been said, orders are already large and supplies are low for the season. There should be great reserves on hand to meet the heavy call of the early fall, but no such reserves are in sight.

The discount for medium and extra heavy pipe, up to six inches, has been changed. Whereas it was 70 and 10 it is now only 70 per cent. A somewhat similar advance has been made with light pipe, the discount now being 60 per cent. instead of 60 and 70 per cent. Fittings, too, have been advanced, the

discount now being 70, instead of 70 and 10.

Lead Pipe.—The scarcity of the pig has made an advance here seem necessary. The scarcity of the pig, of course, is also responsible for the scarcity of the pipe. Supplies are quite low, and there is considerable difficulty being experienced in filling orders.

The new discount upon lead pipe and waste is 15 per cent., in place of 20 per cent.—the reduced figure struck a fortnight ago.

Furnace and Radiators.—Though the demand is remarkably good for this time of year, this can not be held responsible for the change in prices. The high price of all metals is the cause of this. The raw material costs more, and the finished product must naturally cost more.

The changes made this week are: Hot water boilers, 47 and 15 per cent. discount in place of 50 and 10; hot water radiators, 45 and 15 per cent. discount in place of 50 and 10; steam radiators, 46 and 15 per cent. discount instead of 50, 10 and 2½; wall radiators, 40 and 15 per cent. in place of 50 and 10 per cent.

Iron Pipe.—This product, too, is both scarce and costly. The prices have not been advanced lately, but such an advance is now predicted.



## COMPLETE COURSE IN SHEET METAL WORK.

(Concluded from page 18.)

The elevation Fig. 2 is first drawn. This shows the pipe and the shape of the surface through which it passes, and is also a side view of the flashing.

Then a plan Fig. 1 is dropped from the elevation which gives a top view, also the true shape of the pipe and the exact width of flashing.

Then the lines N. M. and R. S. are projected out from A, B, and D, C, their true length being taken from the line S-S-S Fig. 2.

Then the circle in Fig. 1 is spaced off and lines projected up to the line S-S-S Fig. 2.

Then the different spaces on the line S-S-S are transferred to the line N-M and the usual measurement lines drawn.

Then with the T-sqr. placed parallel to N-M bring it against the different points on the circle Fig. 1 and cut the corresponding measurement lines.

It matters not what the shape of the pipe is. The method of getting the flashing for around it would be the same herein outlined.



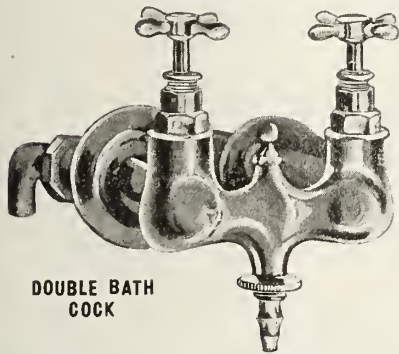
# MORRISON'S

## J.M.T. Cushion Compression Work

(With Tee Handle and China Index Handle)



BIBB  
COCK



DOUBLE BATH  
COCK

These cocks will last for years under ordinary care without the necessity of renewing the washers. This gives them a decided advantage over the ordinary type.

Constructed of Two Rubber Discs or Washers, between which is inserted a Metal Disc. The top washer is contained in a cup-shaped holder—this prevents spreading and allows the washer to maintain a vertical pressure upon the seat.

The plumber who uses these cocks on installations will give the best satisfaction. Our guarantee backs every article.

Write us for samples and prices.



BASIN  
COCK

### The James Morrison Brass Mfg. Co., Ltd.

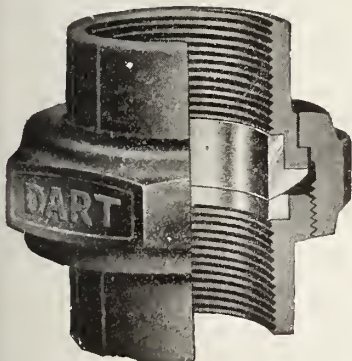
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Use Dart Unions for making pipe connections and you have the best possible insurance against leaks and both-

#### BRONZE TO BRONZE

Bronze on both faces of the joint, it will never rust or corrode.

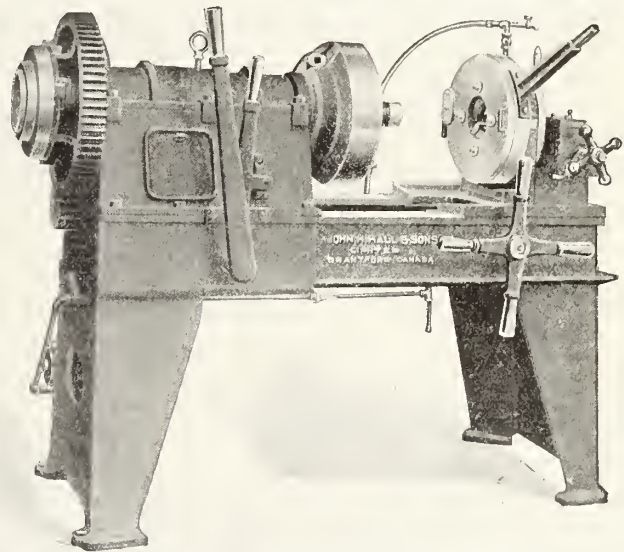


The ground ball-shaped seats allow a quickly and easily made connection whether pipes are in or out of line.

#### YOUR JOBBER HAS THEM.

Every Dart Union has the Trade Mark cut on it and a 2 for 1 guarantee, too.

**Dart Union Co.**  
Limited  
TORONTO - ONTARIO



## PIPE THREADING MACHINES

MADE IN CANADA.

ALL SIZES.

Belt or motor drive for the plumber, the jobber, or the mill, also Double and Single Head Rapid Nipple Machines.

### RAPID UPRIGHT ROLLER PIPE CUTTERS

Write us for prices on pipe machines, any size from an 1/4 to 18 inches.

**JOHN H. HALL & SONS, Limited**  
BRANTFORD, CANADA



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### FOR SALE

FOR SALE — FIRST-CLASS PLUMBING and tin-smithing business in a booming town of about 2,000, the only one within eleven miles. First-class farming trade. Unfinished contracts turned over to purchaser. Owner going west. For particulars, apply to Box 84, Durham, Ontario. (23)

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SALESMAN WANTED— WE DESIRE THE services of a good salesman to cover Ontario, Quebec and Eastern Canadian provinces to market our well-known line of water closet combinations. Excellent opportunity for experienced salesman. Applicants must state age and past experience, and be prepared to furnish references. All correspondence treated confidentially. Address Cooper Sanitary Mfg. Co., 17th and Cuthbert Sts., Philadelphia, Pa. (13)

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FOR THREADING PIPE OR BOLTS

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BARD ADJUSTABLE  
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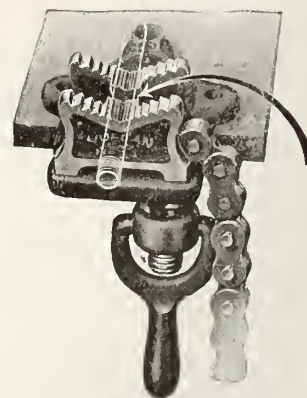
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**"Vulcan"**

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The smallest size (Baby) is of exceptional value to your kit. See the extended teeth to prevent bending of small pipe sizes and note that you will have every day use for its capacity of 1/8" to 2".

Half a handful in size.

Giant in utility.

Low in price.

Get details from your dealer or apply directly for free Catalogue.

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## Asbestos Air-Cell Pipe Covering

Manufactured by **JAMES CUNNINGHAM & CO.**

Pipe and Boiler Covering Contractors.

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— WE STAND BACK OF THEM —

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By sheer force of merit, National Valves have won the confidence of discriminating plumbers and steamfitters throughout the United States and other countries, and we are positive the same degree of favor will be accorded them by Canadian users directly their many good qualities are made known.

The basic idea in the construction of National Valves is absolute efficiency and reliability in operation. To this end they possess many exclusive features, prominent among them being **brass-encased composition** which practically eliminates all deformation troubles.

Our line is quite complete, embracing all kinds of Automatic Air Valves, Thermostatic Valves, Paul Valves, Vacuum Valves, etc. Write us to-day for the complete descriptive folder.

— To Canadian Dealers: —

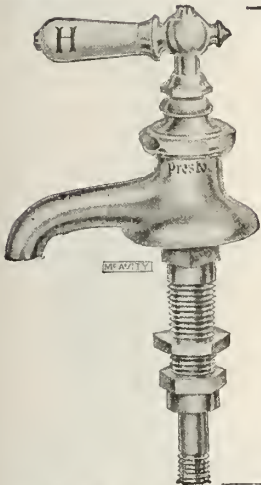
We are creating a heavy demand for National Valves in Canada which will be supplied through Canadian dealers. If you want to share the profits write right away for details of our liberal trade terms. National Valves represent valve efficiency at its highest, and sell readily on quality. Don't wait if you want to sell this quick and easy selling line.

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24-26 S. Clinton Street, - - Chicago

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See Sweet's Index, Pages 1139, 1140, 1141



## "Presto" BASIN COCKS

Nickel-plated. With china index handle. "A quarter turn gives a full opening." Tail screwed for 1-4 inch iron pipe.

**GOOD**

{ METAL  
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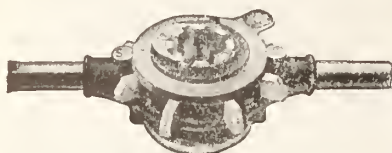
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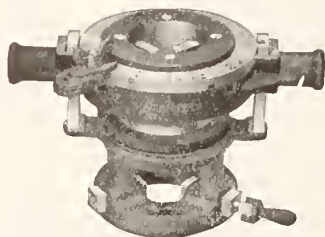
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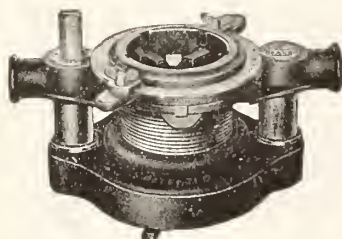




No. 6, threading  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  in. complete.



No. 25B, 1 in. to 2 in. R.H. complete.



No. 25B, 1 in. to 2 in. R.H. complete.

**Perfect  
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**Every  
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Works quicker, easier and more accurately than any other die stock on the market.

Besides this it contains a set of dies that can be adjusted with a twist of the wrist, so as to cut four different sizes of thread.

It requires less keep-up expense than other makes, as it eliminates the buying of three die sets.

It will pay you to get acquainted—write us at once for circulars and prices.

Get our quotations on power machines, any size from  $\frac{1}{8}$  in. to 12 in., motor, belt, gasoline or steam driven.

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Hot Water Quick Opening Radiator Valve.

## **“Miller” Hot Water and Steam Radiator Valves**

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from  $\frac{1}{2}$ " to 2", with or without union, also union elbows.

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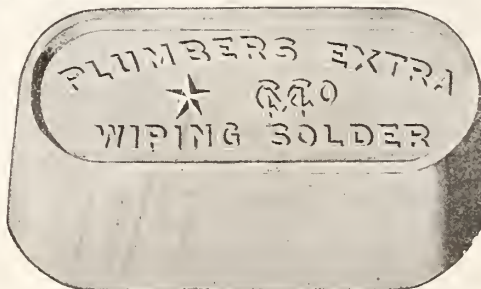


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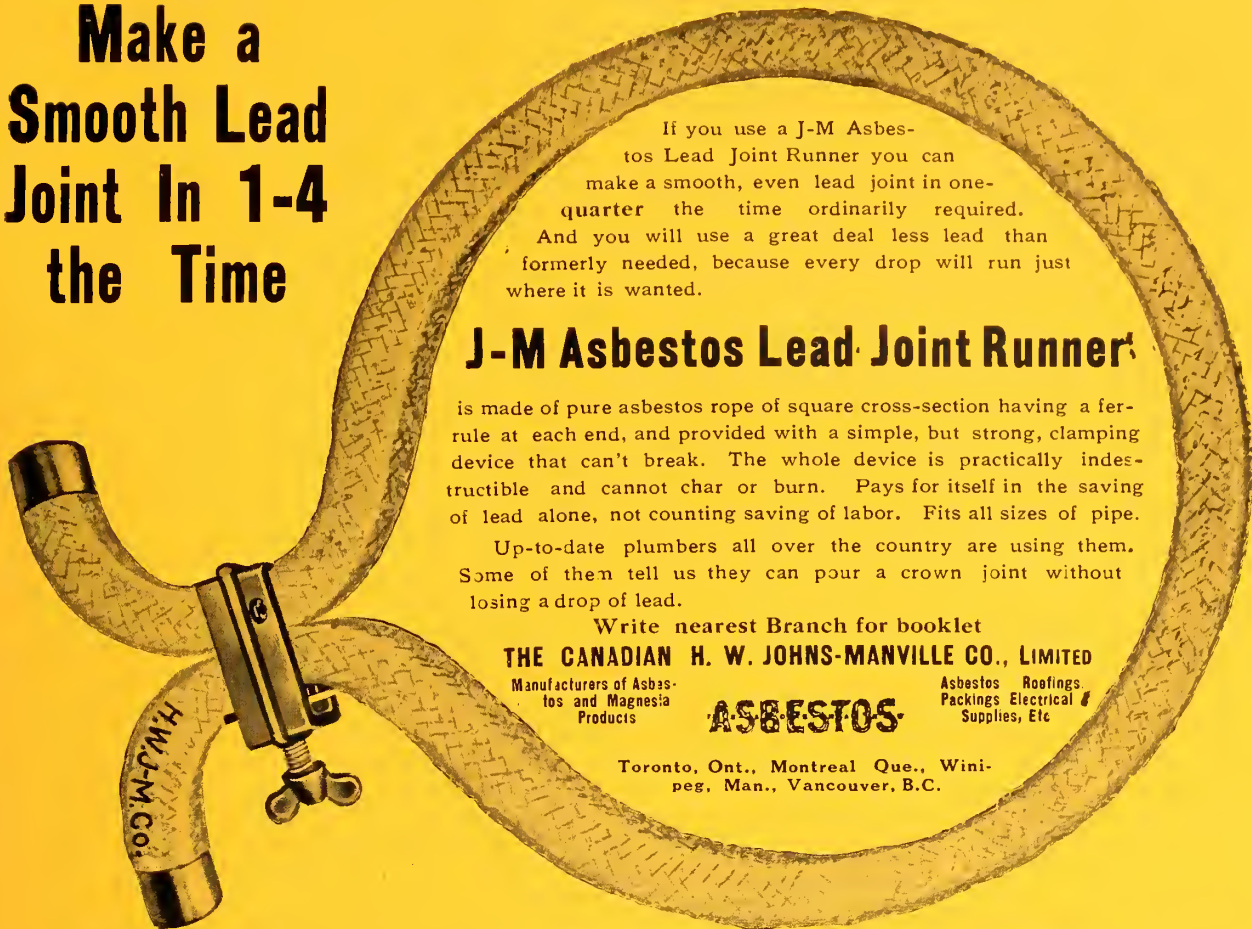
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If you use a J-M Asbestos Lead Joint Runner you can make a smooth, even lead joint in one-quarter the time ordinarily required. And you will use a great deal less lead than formerly needed, because every drop will run just where it is wanted.

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is made of pure asbestos rope of square cross-section having a ferule at each end, and provided with a simple, but strong, clamping device that can't break. The whole device is practically indestructible and cannot char or burn. Pays for itself in the saving of lead alone, not counting saving of labor. Fits all sizes of pipe.

Up-to-date plumbers all over the country are using them. Some of them tell us they can pour a crown joint without losing a drop of lead.

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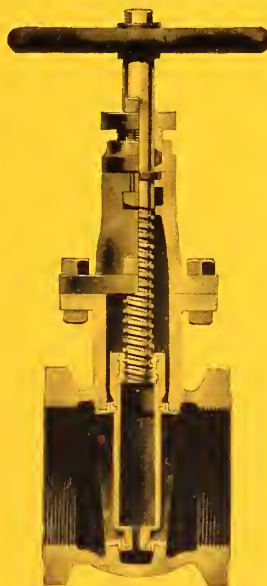
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If you have not used any of these New Pattern Valves, specify "KERR" in your next order. We want you to get acquainted with the most reliable valve on the market.



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Vol. VI

Publication Office : TORONTO, JULY 15, 1912.

No. 14



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HIGH BACK SINKS with Improved Outlet and Large  
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It is one thing to theorize, another to practice. A theory successfully demonstrated is a proof of its accuracy—an assurance of truly scientific conception.

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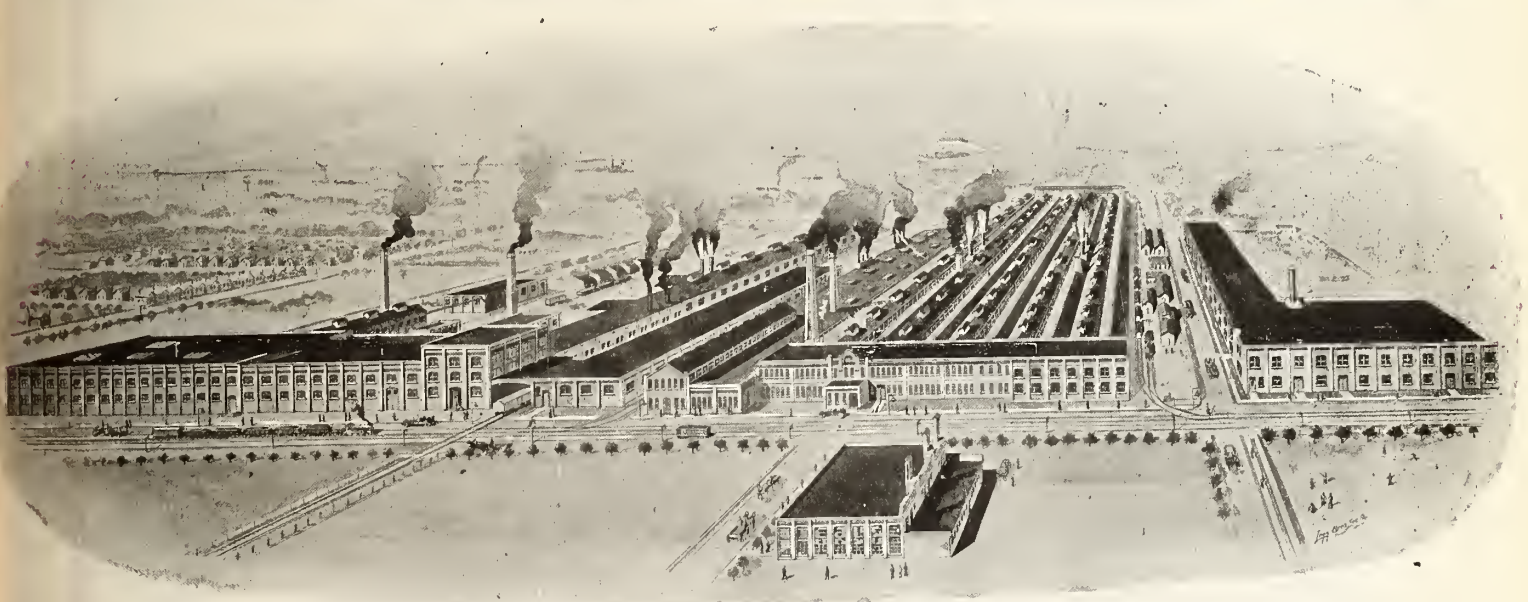
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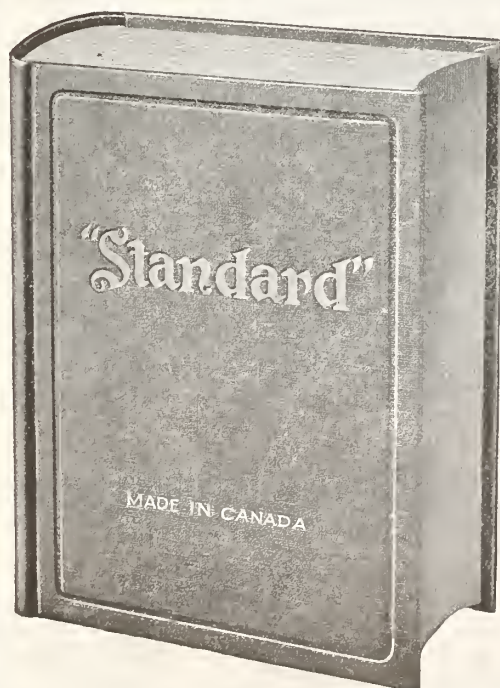
## GREEN AND GOLD LABEL

Guaranteed Porcelain Enameled Plumbing Fixtures



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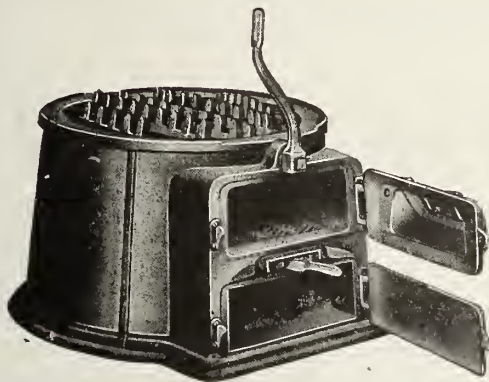
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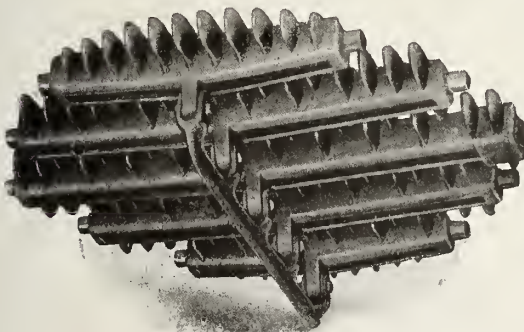
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Wrote his house the following excuse :—

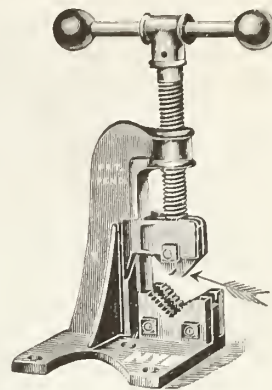
"I didn't do much business last week because the weather was something awful. It rained while I was in Detroit and in Buffalo the wind was almost cyclonic. At Cleveland we had a cloudburst and at Cincinnati I had the grip."

The boss replied: "We get our weather reports from Washington. What we want is orders."

## What You Want is a Nye Pipe Vise

because nobody ever has to make an excuse for it. A tool that is made to do business all the time, and does that work honestly and well, is never sworn at or thrown in the corner.

The jaws in this vise are made from Jessups' Best Cast Steel, and the long screw is cold rolled steel, case hardened. It's a quality tool.



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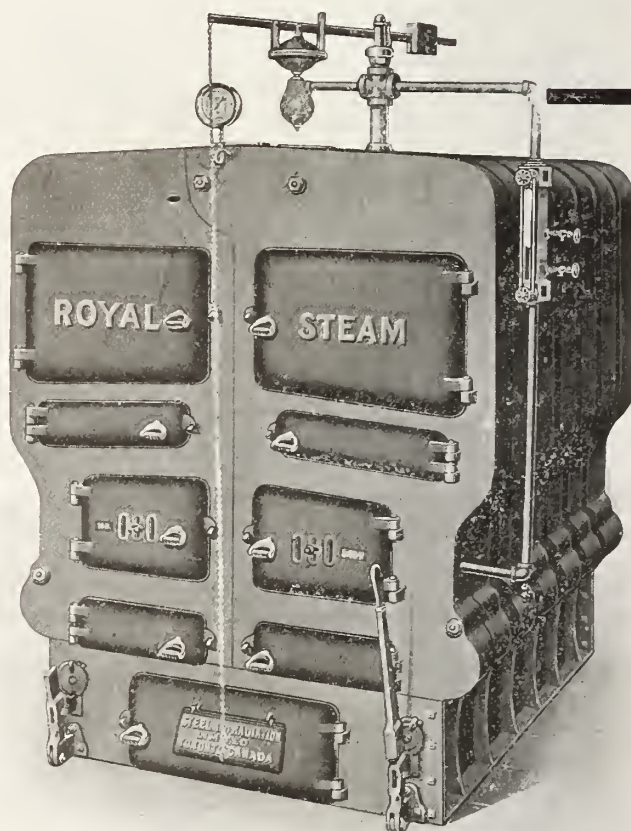
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# Questions to be Considered at Convention

The Calgary Gathering Promises to be An Historic Event—Important Problems are to be Threshed Out—The Attendance Will, From all Indications, be the Largest on Record.

THE convention of the Canadian Society of Sanitary and Heating Engineers, which opens at Calgary on July 18, will be a red letter event. Not only will the deliberations, be featured by matters of the deepest and most vital importance, but the attendance will be more largely representative of the whole dominion than at any previous event.

At first it was feared that the attendance would be mostly from western points. It is now certain, however, that all sections of the east will be largely represented. Toronto and Montreal are sending big delegations and many members from smaller points have announced their determination of going along.

Word from Calgary is to the effect that there will be a very large western delegation. Calgary, Edmonton, Winnipeg, Regina, Saskatoon and Vancouver will all have plenty of representatives on hand. In point of numbers, it will probably be bigger than any previous convention.

When President Walsh, of Montreal, starts the deliberations, he will find that there is plenty of important work for the convention to handle. A brief resume of some of the questions to be considered will be of interest.

One of the foremost topics will be the appointment of a paid secretary. This was decided at last year's convention, but the appointment has not been put into effect. The officers will have some arrangement to suggest for the carrying

out of secretarial work in future. With the widening of the scope of the Association, the necessity for a salaried official will be felt more than ever before.

It was decided at the 1911 convention that, as soon as provincial work was sufficiently advanced, organizers should be appointed. Since that time the work of organization has been carried along to a far more advanced stage. The Ontario society has been placed upon a permanent and assured basis. The New Brunswick men have come together and organized a provincial body, and in Alberta the work has progressed. New local associations have sprung up in all parts of the country.

## Revised Constitution.

The revision of the constitution and by-laws, as made by the officers, will be up for ratification. There are many important points involved. One is the change in name of the society by the addition of the word "domestic," in accordance with the name of the Ontario society. As this word will be required if the society seeks incorporation, it is practically certain that the change will be adopted.

At the last convention considerable time was devoted to considering the advisability of adopting a regular tender for heating work. This was deemed necessary to eliminate the evil of firms tendering on forms supplied by manufacturers. It was felt, however, that the society should not adopt any form until the very best possible had been

obtained and the suggestion was thrown out that members should prepare forms and send them in. The best points could be then selected and used in the compilation of a form which would meet every requirement.

J. E. Farrell, of North Bay, who has made a special study of this problem, has prepared a tender form and heating specifications based on his experience. A copy is now in the editor's hands and it is certainly a very comprehensive and complete form. It will be placed before the convention and should be very carefully considered.

## Next Year's Convention.

Where will next year's convention be held? Three cities have been mentioned—Montreal, Toronto and Winnipeg. Inasmuch as the convention has been held at western points the last two years, it is practically certain, however, that an eastern city will be selected. Montreal extended a cordial invitation last year and will doubtless do the same at Calgary. At present it seems likely that Montreal will be the city selected.

## National Censor Board.

A matter which may come up for discussion is the advisability of taking steps to have a national censor board appointed. This was urged at the Twin Cities last year by the Calgary delegates. It was an important step and, if the appointment of such a board could be secured, it would lead to the standardization of ordinances and fittings in time.



Vice-President E. J. Young, Calgary.



President J. E. Walsh, Montreal.



Secretary John Watson, Montreal.



### EVERYTHING IS READY.

Calgary, July 13.—Everything is ready for the big event. It is now an assured fact that the attendance will be the largest on record. Word has been received that delegates are coming from all parts of the country. The West will turn out as never before and the East is also going to be largely represented.

The programme has been arranged to the last detail. There will be "something doing" all the time. Plenty of time has been left for the business sessions, but the local committees are seeing to it that the rest of the time is well filled in.

The big feature will be the trip to Banff on Saturday. Some of the delegates may arrange to stay there over Sunday. A field day of sports and a banquet are also down on the list.

### TORONTO PARTY START.

Toronto, July 14.—The Toronto delegation to the National Convention at Calgary, left here to-day. The party entrained for Port McNicholl, where they catch the boat for Fort William.

The local men who went along were Lewis Legrow, G. F. Frankland, W. Mansell, Geo. Cooper, Geo. Clapperton, R. Yeomans. All are prominent figures more or less in association work.

### MONTREAL PARTY LEAVE.

Montreal, July 13.—It was a gay party which stepped on board the train at the Windsor Station last night, with Calgary as their destination. There was James Walsh—the President of the

Association—who, overcoming all obstacles had managed to get away. James Ballantyne and J. R. Meadowcroft, past



Watch for this man at the Convention—He will be there to collect your dues.

and present Presidents of the Montreal Local Association, were also on hand. Then there was John Watson, the ever-working Secretary of the Canadian Society, and Mrs. Watson. John Gordon was also on hand, also Mrs. Gordon and Miss Gordon—some of the party are evidently going to toe the line. Arthur Gardiner also managed to get away from work for a while. It seems he said some time ago that if he got a certain roof finished he would go. That roof has been carefully watched. It was finished a few days ago, and the die was cast. Wm. Rodden, of Warden King, and Frank Rawley of the Honeywell Heating Specialty Company, were also on board and helped in the merriment.

### VANCOUVER AT LAST TO FORM AN ASSOCIATION.

Montreal, July 12.—Word comes from Vancouver that a local association has been formed there and so is completed a chain of associations with links extending from St. John on the one side, to the

Pacific Coast. The baby association, moreover, seems to be exceedingly strong for its age. Already it has 19 members, and the word is that more will join shortly. J. O. Sawkins has been appointed the Vancouver Secretary, and is working hard to get the organization in perfect running order. He has sent here for by-laws and a charter, which may be of assistance in drawing up rules and regulations for the new body. There is some talk that the new body will send delegates to the Calgary convention.

### SIZE OF COLD WATER SUPPLY PIPE.

Editor Plumber and Steamfitter.—The pipe that runs down on the inside of the range boiler. How large should it be? Query.

We should say about  $\frac{3}{4}$  inch in size. If you reduce it to all practical purposes you have cut down the whole line to that amount through which water is delivered.—D.C.H.

### USING AN INCREASEER ON STACK.

Editor Plumber and Steamfitter.—I see in some drawings it is shown that, where the pipe goes through the roof in a plumbing job, it is made larger in size. Kindly tell me just why.

T. T. W.

It has been found advisable to use what is called an "increaser" in such cases. Generally the diameter of the pipe is made larger by one size. Thus a 4 inch stack would have a 5 inch increaser used and so on. This is necessary because in an extremely cold climate the frost will close up the stack during the coldest weather. Start the increase in size at a point a foot or so below where the pipe passes through the roof, otherwise the stack is liable to stop up anyway.—D. C. H.



Wm. Mansell, of Toronto, is a ball player of credit and renown—He will probably captain the Eastern team.



Who will be the next President? When time has bowled President Walsh out, the worthy Vice-President, E. J. Young will be next in line.

## Are Sinks Being Installed Too Low?

**Some Claim That the 30-Inch Standard is Not the Best—They Argue That a Few Inches Higher Would Mean Less Bending for the Women—These Few Inches on the Height of the Sink, One Sanitary Engineer Argues, Would Really Make Things Harder for the Women.**

When for years one method of doing a certain thing has been adopted, it seems almost heresy when any one arises to remark that this method is not quite right. People shrink from a new outlook, as Galileo found out when he advanced the unheard of theory that the world was round. Yet at the present time there are some sanitary engineers who are flying in the face of precedent in one matter—the matter of the height of sinks.

Now it has generally been held that 30 inches is the proper height for a sink. Over ninety per cent. of those now installed are of that height, and all sinks which have a solid pedestal are made in the 30-inch size. Only when there is a special request does the plumber make any alteration. The thirty-inch standard has been taken as the final word; yet now—in this year of grace—there have arisen some who question if this elevation is proper. They claim that there would be much greater comfort given were the sinks to be installed three or four inches higher.

### Advocates a few Inches More.

Here is the way one man expressed himself when speaking on the question: "The trouble with sinks," he remarked, is that the people who use them are not all of the same height. If they were it would be quite possible to make experiments which would enable a decision as to the height which gives the greatest comfort. As people are not all the same size, however, we just have to fix a general elevation which seems to give the best satisfaction. Thirty inches has been the accepted height, but I do not believe from my own experience that this is the best. I think a few inches higher would be better in the majority of cases.

"You see," remarked this man, "a sink is being more generally used now than it was. I do not mean that they are being placed in more homes—though that is undoubtedly true, but that they are being put to wider use in the homes in which they are placed. Sinks are now being largely used for the washing of dishes. I hold that the 30-inch height is too low for this. It means a woman must bend all the time she is washing, and every one knows how fatiguing it is to bend for long at a stretch.

### Low Sink Means Much Bending.

"Tables," continued this master plumber, "are built for use by women

of widely different height; but they are generally much higher than sinks. Now a woman washing dishes in a dish pan will always place this upon the table. It seems the right height. When she uses the stopper which has been made so that sinks may be used for dish washing and light laundry work, she has to bend. Yes, I think we would do well to install sinks at about 33 inches instead of 30. I have put some in higher than that, and they have given satisfaction."

So much for the one side. When told what his fellow sanitary engineer had said on this subject, an eastern member of the trade had this to say. The East is always against change, some will say. Well, perhaps, the East has to be shown, but once shown it is ready for any innovation. Any way here are the remarks of the eastern master plumber:—

### The Other Side.

"I think the old height of 30 inches is about right," he remarked, "although I will admit I have been asked several times to install the sink at a greater height than this. I have added two or three inches when desired, and I must say that this has given general satisfaction; but unless I am asked I stick to the 30-inch standard. It is best suited to the majority of people I believe."

Here a question was asked as to the causes for fixing the standard at 30 inches.

"Well, I don't know that I can give them all," remarked the easterner, "but the great cause is gravity. Yes, gravity, he gravely remarked as his assistant, who was standing listening, smiled. Suppose a woman is washing out something in the sink. Her hands are low, her arms stretching almost straight down. When she draws her hands from the water it runs down into the sink. She is not wetted at all, and no water gets onto the floor. Suppose she is washing something on the table—the height at which my fellow plumber would have sinks installed. Her arms are not so straight down. She has to raise them a good deal to get them out of the dish pan. The water tends to run up her arms, on to her dress, and to drip on to the floor.

### An Argument for 30-Inch Size.

"But that is not the only cause," continued this sanitary engineer. "Sinks, as you know, are used a great deal for

washing out pots. These are carried over from the stove, and are laid down in the sink until the time for washing has come. Steamers are taken over there to be drained. Suppose a woman has some string beans on the stove. What does she do when they are ready? Why she carries pot and all over to the sink, and then, holding the cover on fairly firmly, drains the water out of the saucepan. The saucepan is probably heavy for a woman, but she can carry it across and drain off the water. Let the sink be raised three or four inches, though, and she will have to lift the pot over its sides. It would be quite a lift too, and might result in some severe burns as well as some back aches.

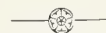
"An inch on the end of a man's nose, you know, makes quite a difference. So does an inch in the height of a sink to a woman who is hurrying across the floor with a heavy and hot sauce pan in her hand."

It was remarked that the sink, even at the increased height which had been spoken of, would still not be as high as the average kitchen table.

"That's right," remarked the easterner, "but you don't see any kitchen tables with sides up do you? Take a kitchen table with sides six or seven inches high. Wouldn't it be hard for a woman to lift a hot sauce pan over that and on to the floor of the table? I think it would."

### Worth Some Investigation.

Thus opinions differ. Probably others take still different views. Compromises may be thought of. The air is full of compromise talk these election days. The subject, however, is well worth some attention. Because sinks have been installed 30 inches from the ground is no great reason why they should be so installed if a greater height would make for greater comfort. Sanitary engineers might well consider the subject carefully, and when they come to any conclusion they should let their fellows know.



### STOPPING A LEAKY NIPPLE BOILER.

Editor Plumber and Steamfitter.—I have set up a boiler connected with push nipples and under test it leaks. How can I stop the leaks?

J. I. C.

It's a rather mean job to tackle, however, we believe that if you place a couple of small handfuls of meal in the boiler and then fire it up slowly, the leaks will soon "take up." We learn that our practical man has done this on several occasions with success.—D. C. H.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, JULY 15, 1912

WITH COMPLAINTS of the scarcity of labor coming from some parts of the country, great importance will be attached to the report which the apprenticeship committee will make at the Calgary convention. Last year a proposal was handed in which provided for a five-year term of apprenticeship.

### THE APPRENTICESHIP PROBLEM

It is thought likely that the committee—fortunately an exceedingly strong one—will have some suggestion to make along this line.

Not only are the cities, which are finding labor scarce, suffering by reason of the lack of a proper apprenticeship agreement, but sanitary engineers in all districts are having trouble. They find that apprentices, as soon as they are entrusted with tools, get the terrible malady, called in the vernacular, “swelled head.” They at once conceive the idea that they are fine men, and leave their positions, taking others where they get higher money.

Quite right, some will say. The laborer is worthy of his hire. That is true, but a man’s hire does not altogether consist in what he finds in his pay envelope every Saturday night. The training he is getting to increase his future earning power also counts.

As it usually works out, the apprentice who leaves one position and seeks another is taken in by some firm which has a lot of shop work. The man is given a small advance on his former pay, and is kept doing the one thing of which he is capable. He does this over and over, never getting a thorough grasp of his work.

The result is that this man never gets much higher than a helper. When he does job work it is badly done, and the people’s faith in the sanitary engineer is shaken.

On the other hand, the men who stay with one reliable firm for five years will be taught all the branches. They will be competent workmen when they finish—capable to do good work, and to earn the best wages.

Undoubtedly there is some regulation needed which will prevent apprentices moving too readily from one shop to another. In certain places much is done toward this end, by reason of an agreement among the sanitary engineers which forbids them to take one another’s apprentices. Something wider than this is needed, however. If the committee which has been working upon the problem can present some feasible scheme, they will have done splendid work.

sanitary trade. He will give a series of talks full of valuable hints and practical ideas for the young beginner. They should be read closely.

In an early issue, a series of articles will be begun by Chas. W. Chandler on simple forms of septic tanks. The first of these articles is now in the editor’s hands and he feels assured in saying that this series will be found eminently useful by the sanitary engineer, particularly if he is located in a district where there is no water connection. The kind of jobs which the country plumber is called upon to do will be dealt with and inexpensive installations will be illustrated and explained.



THE CUSTOM of employers giving holidays to staff members has become more general of late years. This is as it should be, for it is in the interests of both employer and employe that the latter should have an opportunity to rest for a certain period each year, and thus recuperate his powers.

USE AND ABUSE OF HOLIDAY The employer who looks at the matter in that light will be quite willing to give each member of his staff the privilege of an annual rest.

The fact should not be lost sight of, however, that the granting of holidays is intended for mutual benefit, and that the employer must benefit quite as much as the employe. The former gives the holiday in order that the latter may return to work with renewed vigor and a keener interest, and with faculties sharpened to the point of highest efficiency by the rest and relaxation. The employer is entitled to this share of the benefit.

The employe benefits doublefold from opportunity to rest from work. He probably needs the rest in the first place. In the second place, he is afforded an opportunity to improve his own usefulness for the following year. A holiday well spent sends a man back to work with higher ambition to advance himself.

This is the real use of holidays. The abuse consists in utilizing the time of rest to plunge into a continuous round of riotous gaiety — excursions, all night trips, fatiguing pleasures, cramming the largest possible measure of excitement and strenuous exertion into the time allowed. The sequel to such a holiday is that the employe returns to work jaded, more tired than when he left, lacking in ambition, initiative and the desire to promote his own and his employer’s interests.

IN LAST issue a series of articles “Tips to Helpers” was begun. These articles will be written by “Phoenix,” the cognomen of one of the best known writers in the

# Up-to-date By-law in a Small Town

Terms of Legislation Enacted in New Liskeard as Result of Consistent Work  
Done by J. Murphy—It Provides For Inspection, Licensing and Examination  
of Plumbers.

THE plumbing by-law in force in the town of New Liskeard is a monument to the progressiveness and energy of the leading representative of the trade in that place, J. Murphy. It appealed to Mr. Murphy some years ago that a by-law was badly needed and he started in to secure one. He worked hard and, for a time, unsuccessfully. The indifference of the legislative powers in the town did not daunt him, however. He kept right at it and gradually forced home conviction to the minds of the municipal bodies that a by-law was really needed. The present by-law was then put through, Mr. Murphy taking an active part in drawing up the provisions.

It is in all respects an up-to-date piece of legislation. Measures and restrictions which have been found wise in larger places are included and are rigidly adhered to.

Some of the clauses are as follows:

1. Except in or to stables not used as dwellings, no person shall construct or extend any drain for the reception of sewage or waste water under or into any building or connect the same with any public or other sewer or drain unless the said drain shall in its plan and construction conform to the following requirements:—

(1) All soil pipes within the walls of any building shall be of cast iron when not covered with earth, and shall be continued at least three feet above any opening in the roof, which may be within fifteen feet of same, and three feet above any opening into any adjoining building or extension, when such building or extension is within fifteen feet of such pipe and be left open so that the whole of the inside drainage may be thoroughly and constantly ventilated. All soil or vent pipes, when they pass through the roof must be properly flashed with 5-lb. sheet lead and made watertight.

(2) Approved tile pipe may be used under ground. Tile pipe in underground drainage shall be of the best material and workmanship, and free from all blisters, cracks, flaws or defects of any description; all junctions must be curved; no right angle junctions will be allowed; all joints must be put together with the best Portland cement, properly mixed and tempered, and finished flush with the edge of the pipe; the joints on the inside of the drain to be in all cases

properly cleaned and finished so as to be perfectly free from all burrs; drain shall have a fall of not less than  $\frac{1}{4}$  inch to the foot.

(3) If the house is drained by a continuous iron soil pipe from the outer connection with the house drain at least three feet outside the wall to the opening above the roof, as hereinbefore provided, the trap and the fresh air inlet may be dispensed with;

(4) The pipe shall have two cleaning-out screws, one to be about twelve inches above and in front of the bend at the basement floor, and the other between the said bend and the outer wall of the house; in case of a continuous iron drain cleaning-out screws or airtight hand-hole fittings must be attached whether the main trap is used or not.

(5) All drains and plumbing fixtures of every house or other buildings shall be provided with sufficient traps and vents to prevent gas from the sewer, drain or waste pipes from escaping into any department, and each such fixture shall have its own trap with sufficient vent; said trap to be placed directly under and as close as possible to fixture.

(6) No fixture shall drain through more than one trap (main trap excepted), the vent to be not less than one size smaller than trap, and no vent less than one and one-quarter inches in diameter;

(7) No trap vent pipe shall be less than three inches in diameter where it passes through the roof, and all vent pipes must continue to rise after leaving the trap and pass out through the roof or connect with soil pipe.

(8) The rule for soil pipe terminus, as hereinbefore mentioned, shall govern said vent pipe.

(9) Vents from water closet traps shall be two inches for a length of twenty feet, and for a greater length three inches in diameter. Where a syphon jet closet is installed the vent may be dispensed with where the closet is not more than ten feet from main soil pipe. In case of two or more closets on the same floor there shall be a loop vent not less than three inches in diameter.

(10) Closet vents into which other vents are connected shall be three inches in diameter. When the vent pipes combine they must be increased in size

and all water closets, slop sinks and urinals must be supplied with 3-inch local ventilation, connected to a heated flue.

(11) Approved automatic vents may be substituted when necessary or advisable on special permit of the Medical Health Officer;

(12) No safe waste, range-boiler or cistern overflow shall be allowed to connect direct with any drain;

(13) All rain water leaders shall be trapped when connected with the outside drain.

(14) Refrigerator wasters shall be supplied with properly ventilated traps, and be disconnected and have drip basins when necessary;

(15) Waste from bath and basin will not be allowed to connect to water closet bend, and must have a separate fitting or connection to receive the same.

8. No master plumber, plumber or workman, engaged by the owner of any building, to construct reconstruct or alter any portion of the drainage, ventilation or water system thereof, shall do any work in connection with such construction, reconstruction or alteration at or upon any such building until such master plumber, plumber or workman has satisfied himself that the owner has filed his application for a permit for such work, as required by this section, and has obtained a permit therefor as required by Section 10 of this by-law, and the production of such permit from the Medical Health Officer shall be sufficient evidence to the said master plumber, plumber or workman, of the application at the Medical Health office having been properly made.

All plans must be legibly drawn in ink on heavy white paper or on tracing linen, and on a scale of eight feet to an inch.

6 inch diameter,	100 lbs.
5 inch diameter,	85 lbs.
4 inch diameter,	45 lbs.
3 inch diameter,	30 lbs.
2 inch diameter,	20 lbs.

and all pipes, traps, bends or fittings shall be of good quality and shall be free from flaws or defects, and shall be of uniform thickness, which shall be immersed in linseed or other vegetable oil to prevent them from rusting.

(To be continued.)



# Sanitary Engineers Hold Excursion

Big Outing at Riverside Park, Guelph—Baseball Games Played and Races Run—Band Was in Attendance and Meals Were Served on the Ground—Notes of a Successful Event.

**G**UELPH, July 6.—The members of the Toronto Association of Sanitary and Heating Engineers, arrived here this morning by special train, it being the occasion of their first annual excursion. Over two hundred were on board, this number including women and children. It was a representative gathering.

The train pulled out of Union Station, Toronto, at 9 o'clock and arrived in the Royal City about 11.30. The C.P.R. runs close to Riverside Park so the party were taken there direct. A group of Guelph men were on hand to welcome the train—Harry Mahoney, Fred Smith, Andy Malcolm, Geo. Gringer, Lockart of Galt, and quite a few more. A number of men from nearby points arrived during the afternoon and joined in the sport.

The meals were served in a pavilion on the grounds, the excursion committee having arranged with local caterers. As a result, it was not necessary to leave the park at any stage of the day and ample time was thus given for running off the programme of sports.

The first event was a game of baseball between the Toronto crowd and the representatives from outside points. It proved a fast and scientific exhibition; exactly that, fast and scientific. An indoor baseball had been pressed into service and this made the hits shorter and the fielding surer. Muffs were rare and on one occasion, a double play was pulled off—Allison to Boddington. One of the

features of the game was the demon fielding of Kenny Allison, the Queen City third sacker. He ate up grounders, and for handling hot liners and foul flies he had Bill Bradley lashed to the lampost.

Harry Maloney captained the provincial team and put a lot of ginger into the play of his men, but not quite enough to pull out ahead. The score at the finish was 6-5 in favor of the Toronto bunch.

The score was as follows:—

Toronto—	R. H. E.
Menzies .....	1 3 0
R. Wright .....	1 2 0
W. Boddington .....	0 2 0
Schultz .....	1 2 16
Allison .....	2 3 0
Needham .....	0 2 0
Fullerton .....	0 2 0
Smyth .....	1 2 0
Macklem .....	0 1 0
— — —	6 19 16

All-Ontario—	R. H. E.
Lockhart .....	0 2 0
McDonald .....	1 1 0
Downs .....	0 2 17
Ross .....	1 1 0
Malcolm .....	0 1 0
Mahoney .....	0 2 0
Waterman .....	0 2 0
Gringer .....	2 3 0
MacLaren .....	1 2 0
— — —	5 116 17

## Races Run Off.

The weighty question of superiority between the Toronto and provincial members having been decided, the races were then begun. The children first competed. The youthful sanitary and heating engineers showed that they could run, and some hot finishes were seen. The girls also went into the sport in real earnest.

The big events were the races for the grown-ups, however. Jack Fullerton discarded his shoe leather and won the committee race with a fine sprint. Billy Downs showed his heels to the travelers.

The work of H. G. Waterman was worth special mention. Although a man of some avoirdupois, he ran like a deer and was right up at the finish every time.

## The Travelers Won.

The excitement reached its tensest point when the travelers challenged the sanitary engineers to another game of baseball. It looked like presumption on their part after the gilt-edged exhibition which the latter had put up earlier in the day, but traveling salesmen are never backward about tackling real obstacles. Accordingly two teams were picked and the fray began.

"Johnny" Aggett went into the box for the engineers and the batters he put up had the sales experts fanning the ambient. The support he got in the early stages was nickel-plated, finely polished and double frilled. "Billy" Mansell had been induced to play first



Views Taken at Riverside Park—The line-up for the Married Men's Race is Shown to the Left—The Rush to the Pavilion on the sound of the dinner bell is Shown to the Right.

and he showed a lot of class, while the rest of the field were going in big league fashion. The travelers were right up against a hard proposition despite the herculean work of Darling in the box and Downs behind the bat. At the end of the fifth, the engineers were ahead by 9 to 6.

The engineers trooped off the field under the impression that five innings had been agreed upon as the finish. The travelers, however, hadn't had enough, and insisted that the game was billed to go six innings. They got their way. And then the to-be-expected happened.

The engineers were a little nervous when they took the field. One Marian, who had shaped up earlier in the game as an embryo Tim Jordan, strode to the plate and made his bat and the ball meet with such precision and force that the ball didn't stop going until he had made the circuit. This kind of unsettled the fielders and the travelers got six more runs before the innings was over. The engineers made a valiant attempt to retrieve their lost ground, but only managed to put a couple of runs across.

The score was as follows:—

Travelers—	R.	H.	E.
Darling .....	1	1	0
Downs .....	2	2	18
T. H. McLaren .....	2	2	0
Marian .....	2	3	0
McKellar .....	0	1	0
J. McLaren .....	0	2	0
Alexander .....	3	2	0
Dobie .....	2	2	0
Howell .....	1	2	0
	13	17	18
Sanitary Engineers—	R.	H.	E.
Hicks .....	1	2	0
Aggett .....	0	2	0
Mansell .....	1	2	0
Ruddick .....	1	2	0
Price .....	1	2	0
Allison .....	3	3	0
Mahoney .....	2	2	0
Lockhart .....	1	2	0
Dokin .....	1	2	0
	11	19	0

#### Supplied Band.

The Guelph members secured the services of the G.M.S. Band and a good programme was rendered during the afternoon. When the sun began to lessen the intensity of its attentions, dancing began. Geo. Cooper was the first to lead a partner out on the floor and he proved his merit as a terpsichorean performer. Others followed, although the warmth of the day prevented very much dancing being done.

Quits were then the attraction and some games were played back in the grove.

Supper was served at six, and the return journey began at 8 o'clock. The train arrived in Toronto shortly after 10 o'clock.

#### Excursion Notes.

Billy Downs asserted that it was an ideal day. It was a little warmish though.

Rumor had it that A. F. Passmore was left behind. A. F. explains that in reality he left on the 6 o'clock regu-

lar train, in order to meet Mrs. Passmore who was coming through from Detroit.

Back in the grove, the mosquitoes were real active.

Make it an annual event.

Kenny Allison certainly is some third baseman.

Schultz was barred out of the committee race. He had already won a prize.

Grab-bags were handed around on the train.

T. H. McLaren played a nimble game on first for a man of his Falstaffian proportions.

## Pushing the Sale of Water Heaters

Methods Adopted by John Watson of Montreal—Puts a Number of Models in His Store Window — It is Impossible to Quote on Installed Price Without Investigation.

It is the combination work which has won many a lacrosse game. Combination, or co-operation—the more dignified term—has also helped many a business; and now it seems that combination of telephone and show window has been doing a great deal to help the sale of water heaters. Such, at least, has been the experience of John Watson, of Montreal.

Mr. Watson has been pushing the sale of water heaters, lately, and to bring these prominently before those passing his store has placed several models in one of his windows. A good number have been attracted by these heaters, and have come inside to ask about them. They must make inquiry to get all the information, for Mr. Watson has found that conditions differ so much, in different houses that it is impossible to quote an installed price.

#### Where Telephone Helps.

Many there are, however, who either because they are in a hurry, or because of bashfulness, will not enter the store. Here is where the telephone works well. Now a person may be afraid to ask something to a man's face, but they will willingly ask it over the telephone. This has proved the case with the water heaters, for a number of phone inquiries have been received, and as a result of these several sales have already been made.

"I try not to frighten these people who call me up," remarked Mr. Watson. "Usually it is a woman. Either it was she who saw the heaters, or the husband commissions her to do the telephoning. Any way there is a danger that the woman may ring off without giving us any information which helps us to make a sale.

"I have found it a good policy not to ask, 'Who's speaking' too soon. There is plenty of time for that.

"The inquirer almost invariably says that she noticed a certain heater in my window, but that there was nothing to explain how much this would cost installed. Then I explain why this is. I state what the price of the article itself is, such and such, and point out that it costs more to install them in some houses than others. Then I sometimes ask how the water pipes and gas pipes are fixed in her house. The woman can never tell, and I suggest that I send some one up to look at these. If I have a man going in that direction I say so, and do not let the woman feel that she will be putting us out much by having us inspect her house and give an estimate on the cost of installing the heaters.

#### Sales Satisfactory.

"In this way we have gone to a number of houses. We have not sold a heater in every case, but the sales have more than paid us for the trouble taken.

It is evident that people are anxious to get these heaters, from what Mr. Watson says. He states that only the other day he went to examine the piping in a certain house; having been asked to do this, only after such a telephone conversation as outlined above.

The estimate pleased the woman who had inquired about the heater. She said she must consult her husband, but asked if the heater could be in working order by Tuesday if they decided to buy it.

"Yes," said Mr. Watson.

Later the order for the heater was given, and immediately after that there was a query to know if it would not be possible to have this in working order by Monday. Tuesday seemed too far off.

There are some pointers here which are worth careful consideration. This method of working the window and the telephone together is deserving of some study.





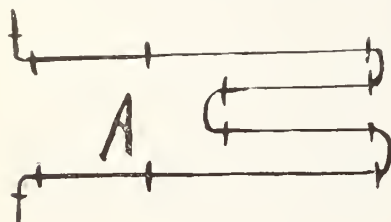
# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## COIL IN STOVE STOPS UP.

Editor Plumber and Steamfitter.—I am sending you a sketch of a coil in a cook stove. To get all the heating surface I desired the coil was made similar

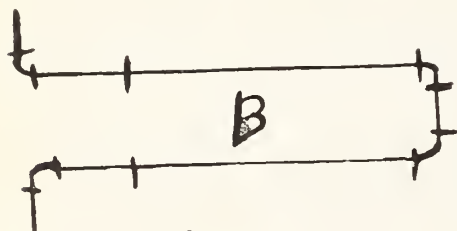


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to drawing enclosed. It stops up and has to be taken all apart and cleaned. What would you do about it? I used  $\frac{3}{4}$  inch pipe.

R. C. J.

If a certain amount of heating surface is necessary and cannot be obtained in the size pipe run, we should advise using a water front or else running the coil as shown in "B" and using larger pipe. To us it seems no wonder that,



2

with certain kinds of water that "A" would be forever stopping up and consequently giving all kinds of trouble. Unless the water used is free from lime, etc.,  $\frac{3}{4}$  inch pipe would be too small anyway and we recommend a larger size. You can use reducers and couple up to range boiler by unions having lead gaskets.—D.C.H.

## CLOSET PIPE SWEATS.

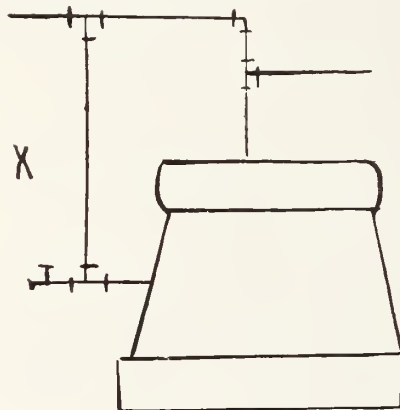
Editor Plumber and Steamfitter.—The supply pipe to a closet tank sweats very badly and I would like to know the very best way in which to practically cure it.

D. E. Farrell.

About the quickest and easiest is to wipe the pipe thoroughly dry and then wind it with tape. This makes a more secure and longer lasting job than to wind with paper. The tape can be painted to correspond with the wall decorations and job will give entire satisfaction.—D.C.H.

## BOILER THROWS WATER INTO MAIN.

Editor Plumber and Steamfitter.—In a past issue of your paper I saw something as to a steam boiler lifting water into the mains. Now, I have one con-

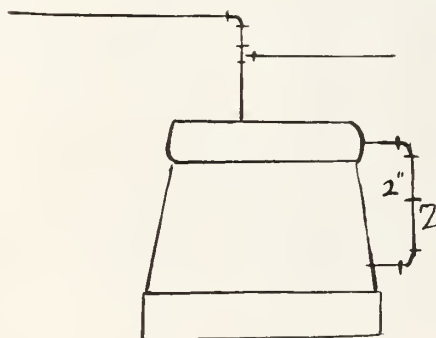


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nected as per drawing enclosed (Fig. 3) and it turns the same trick. What shall I do to cure it.

J. B. F.

As connected in Fig. 3, you would cure only half of the job anyway. You can



4

leave the pipe "X" on the system if you desire, or take it off. Put on an equalizer, at least 2 inches in size, connected as shown by "Z" in Fig. 4, and it should relieve the lifting of water in both mains. The one shown in June might have been treated the same way, but we were informed that the dome contained no tapping and judged the way we suggested was easier than drilling a hole in the dome.—D. C. H.

## A "QUEERED" WATER GLASS.

Editor Plumber and Steamfitter.—I have observed some of the questions and answers in regard to the action of water in the water glass. Now I had some experience last year that I will relate for the benefit of some readers. I put in a job and had the fitter connect it up as per the plan. Well, when we came to fire it up the boiler appeared dry as far as any water showing up in the glass was concerned. We charged the mains and returns several times but could not make the water stay in the glass. Finally, I concluded that the bottom pipe of the water glass should go into the ring, and not into the bottom of the fire pot as it was connected. So I changed it and the water at once showed up (under fire) and has remained steady ever since.

J. E. Foley.

## BEST WAY TO FILL A DITCH.

Editor Plumber and Steamfitter.—I notice that whenever they fill in a ditch they use water if they can get it, to assist reducing the bulk. I also see that these ditches so filled generally cave in later and have to be re-filled. Is there a better way of doing this job?

Helper.

The dirt should be tamped in dry. All the dirt that came out of the ditch can generally be marked back provided the men are not in too great a rush. In the long run it will not cost as much to tamp it back dry, as it will to have to make two or three trips back and refill.

A job tamped properly back with the dry dirt will not cave in nor settle later when rained upon and no unsightly hump or ridge need be left to disfigure the premises or street.—D.C.H.

# Need is Felt of Neater Shops



Good Results Are Obtained When the Shop is Kept Neat and Attractive—  
Up-to-date Premises Are Business Getters—Two Good Examples.

**T**HE value of attractive premises is not to be overlooked. A plumbing shop with a good showroom and well-kept windows is an asset.

Many men in the trade do not realize the business-getting qualities of neat premises. They think if they can make their prices right, it is all that is necessary to get business. They are sadly mistaken, however. People go by preference to the sanitary and heating establishment which looks the most up-to-date. If the shop is well fitted up and neat, they naturally believe that the proprietor is doing a good business and that he can be depended upon to give satisfactory service. On the other hand, the shop that is small, dingy and disorderly does not give this impression. The average person inevitably concludes that the proprietor of such an establishment is just as far behind the times as his place of business.

The man who does business in unsuitable quarters does not get the chance to figure on as much work as his more prosperous looking and wiser competitor.

## A Permanent Window.

Illustrations are herewith presented of two establishments which have the desired qualities. At the head of the article is shown the business premises of Geo. L. Lander & Co., Oshawa. It is interesting to note that the window to the left is permanently fitted up as a model bathroom. The walls are covered with green burlap and are paneled with a white enamel finish. The floor is covered with linoleum and a complete bathroom outfit is shown. This display serves as a permanent advertisement of the plumbing end of the business.

Geo. Lander is himself a practical plumber and he looks after the mechanical end. A large business is done in the plumbing and tinsmithing lines. Chas. Lander, who has had a wide experience looks after the buying. At present they employ a staff of about twenty-five men in the store and shop.

The idea of featuring plumbing goods in the window is one which might well be employed by other firms.

## Interior Showroom.

The second illustration is of the interior of the showroom of R. G. Sturgeon & Co., Peterboro. They moved recently into their new quarters and have now an up-to-date establishment in every way.

Norman Brand, who is bookkeeper and office manager is shown in the picture.

## VENT STACK VS. VENT PIPE.

Editor Plumber and Steamfitter.—  
Can you tell me the difference between a vent pipe and a vent stack?

S. G. G.

If you are familiar with plumbing terms you should have no difficulty in recognizing a difference between a pipe and a stack. Just either a main line and a branch road so to speak. The stack is the whole works, so to speak, as far as venting is taken into consideration while a vent pipe is generally connected into the stack from one fixture only—or should be. Some plumbers are bum enough to connect the bath tub and lavatory into one vent pipe which is not the best practice by a long way. Trusting that we have made the matter plain we are open for another question.—  
D. C. H.



An Interior View of the Premises of R. G. Sturgeon & Co., Peterboro.



# Methods of Sewage Disposal

By Chas. W. Chandler.

In fig. 1 is shown the general arrangement of a typical sewage disposal plant for a small city. It consists (a) of a Septic Tank of 80,000 gallons' capacity, in which the sewage is first received; (b) of two sand filters, each containing 13,000 square feet of area, through which the sewage is filtered after first passing through the septic tank; and (c) of a sludge area provided for drying the sludge after it is taken from the septic tank, preparatory to hauling it away. Usually the septic tank should be nearly emptied of sludge about once a year. The sludge area may be simply a prepared earth area on which the sludge can stand and drain. Usually the sludge area is at a lower elevation than the bottom of the septic tank, and the sludge

is allowed to run out upon it through an iron pipe by gravity. Otherwise a centrifugal pump may be provided for pumping out the tank.

In fig. 2 detailed plans are given of the septic tank whose general location is shown in fig. 1. The tank shown is made entirely of concrete, reinforced with steel rods. Even the flat part is 5 inches of reinforced concrete. It consists of two parts as shown, a septic tank proper, and a dosing chamber.

The septic tank proper holds 60,000 gallons, and is divided longitudinally into two compartments, one twice as large as the other, to permit the size used to be varied to suit the amount of sewage flowing. Entering at the left hand end of the tank, as shown in fig. 2 the sew-

age passes into the tank through six openings, and, striking a baffle wall, the currents are forced down and spread out to give a uniform distribution of the flow. At the opposite end of the septic tank proper, the sewage must pass up under another baffle wall, and then flows into the dosing chamber over six weirs, opposite the six inlets. In falling from the weirs the sewage is aerated.

The dosing chamber holds 20,000 gallons, and is provided with two alternating siphons, one connected with each sand filter bed. These are arranged so that they discharge in rotation. Whenever the dosing chamber fills to the high-water line, one of these siphons discharges the entire 20,000 gallons within a few minutes upon the surface of its

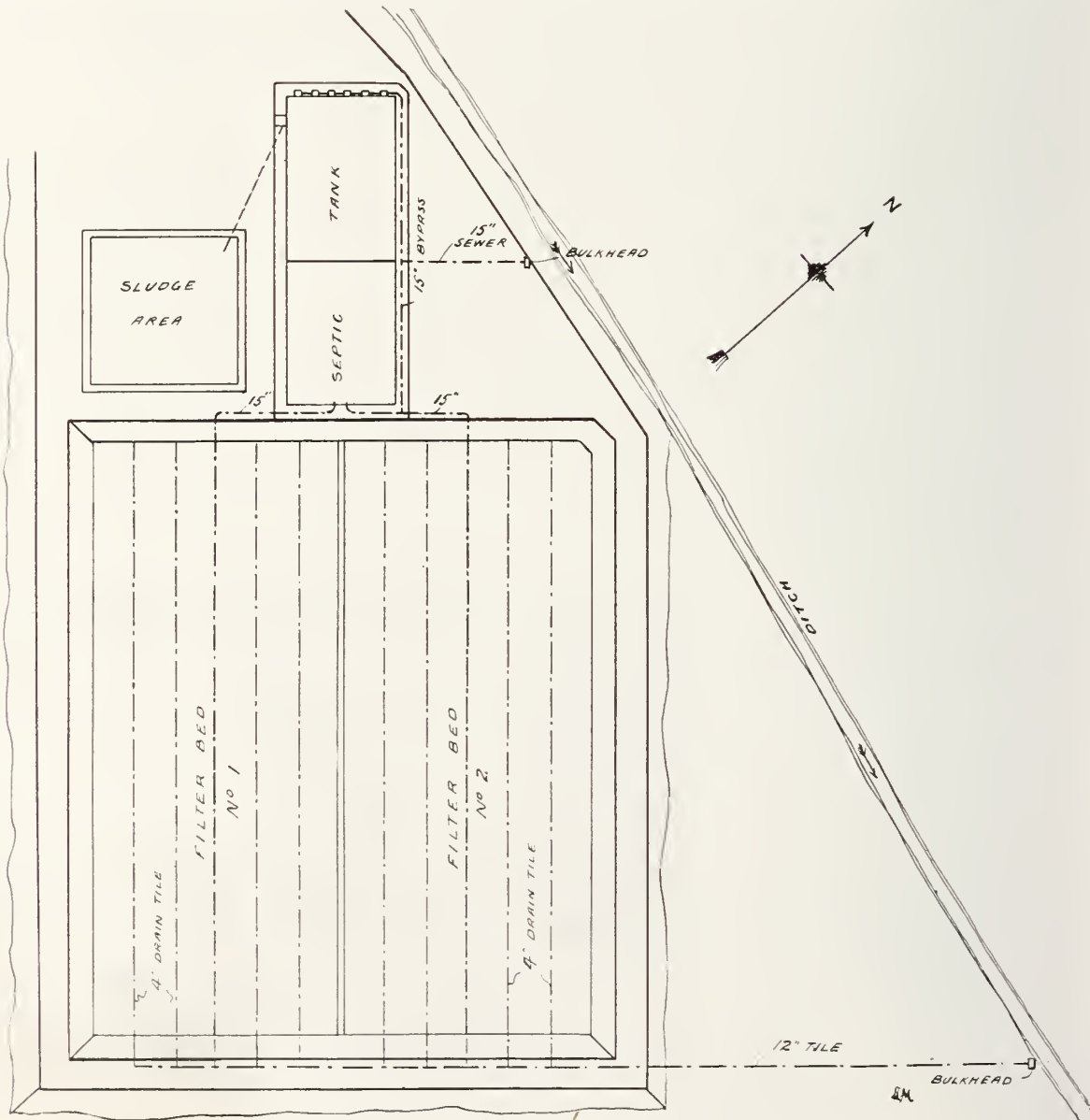


Figure 1.—Plan of Sewage Disposal Plant, Carroll, Iowa.

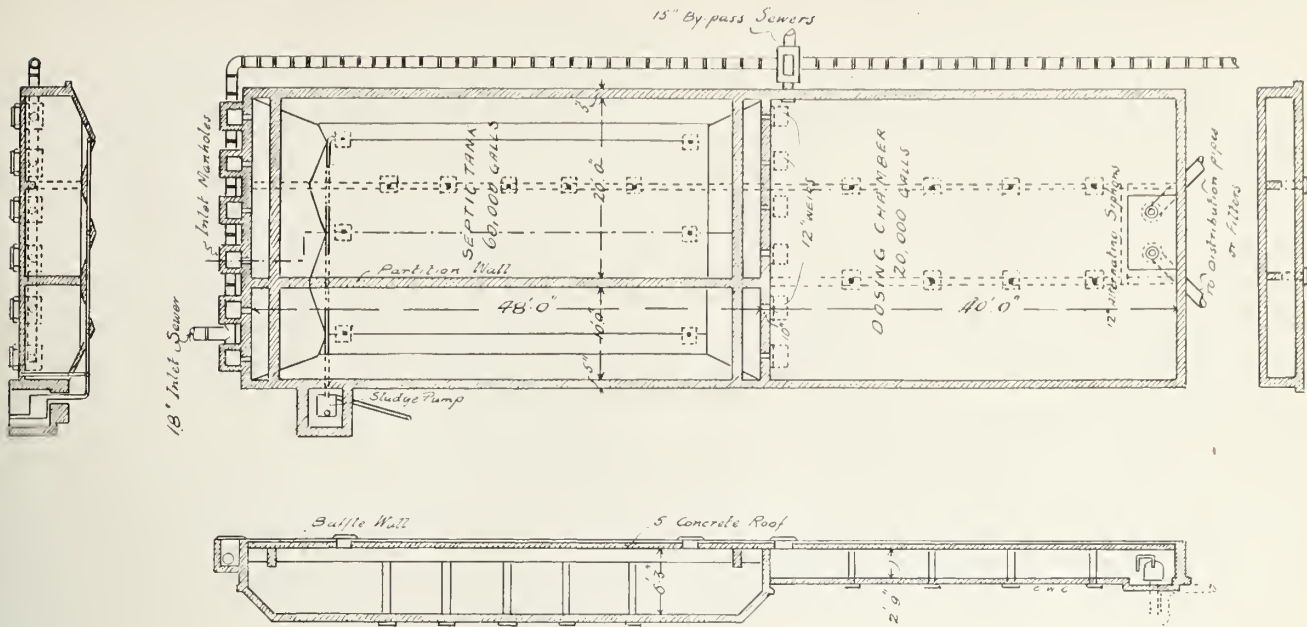


Figure 2.—Plan and Sectional Elevation of Septic Tank.

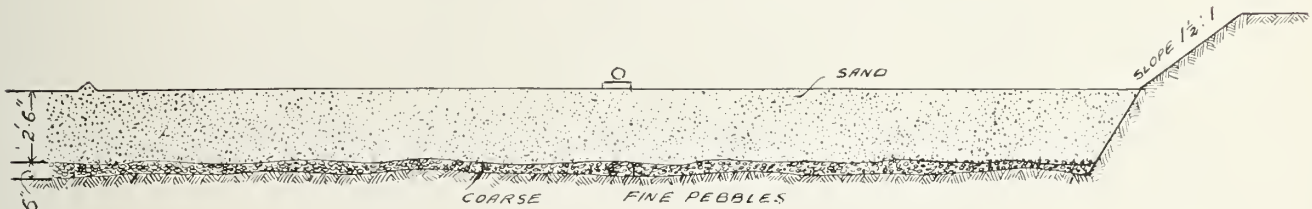


Figure 3.—Cross Section of Intermittent Sand Filter.

filter. The distribution of the sewage upon the filters is thus automatic.

Fig. 3 gives a cross section of one of the intermittent sand filters shown in fig. 1. Each of these filters is 200 feet long, by 65 feet wide, by 2 feet 9 inches average depth. A large sewer pipe from one of the alternating siphons passes down the centre on top of each bed, with 4-inch openings each side every 10 feet for distributing the sewage evenly over the surface. The sand is 2 feet 5 inches deep, and is underlaid with a layer of graded pebbles 0 to 6 inches deep. Lines of 4-inch agricultural drain tile 13 feet apart are provided to remove the filtered sewage.

#### PLUMBER NOT TO BLAME.

Montreal, July 10.—A case of a plumber's responsibility for work which is defective was tried in the local court recently, and only this week was a decision handed down from the supreme court exonerating the plumber from blame, and throwing out the suit for \$5,000 damages.

A landlord, O. Galarneau sued his plumber, G. Champagne, claiming damages as the result of a broken thread in a joint, which permitted gas to escape. Mr. Champagne claimed that the pipe had been in good shape when he completed the work. Certain tests, he

proved, had been made which would have shown a defect had one existed.

At the time the plumbing work was done, other operations were going on in

the house. It was held that the thread might have been broken as the result of this work. Anyway the plumber was cleared of the blame.

## Plumbing Goods About to Rise Early Ordering Should be Profitable

Let all those who are handling plumbing lines for retail sales take warning. Prices are going to rise.

The statement can be made with little fear of any retraction being necessary at a later period. Those who are closely in touch with the manufacturing end have stated that an advance is to be expected.

Here is what a man high up in one large concern has to say:—

"If there are any hardwaremen or plumbers who are counting upon tendering on any plumbing work they should bear in mind that an advance in many of these lines is coming. They should prepare their figures with this in view and should, if successful in their tender, order what will be needed at once. It is a little difficult to say just how soon this advance—or this series of advances—will come. It will not be long in arriving, I believe, but I could not fix the exact date."

That is one man's opinion, and there are others who agree with him. More-

over, every thing points to a rise in prices. Lead, iron and copper are all selling at a higher figure now than they have for a long time. Solder has been advanced. Brass and copper products, used in many plumbing fittings, have been considerably raised. In view of these things nothing but an advance is to be expected. When the raw material leaps upward the finished product must advance at least a little.

It is probable that soil pipe and lead pipe will be among the first products to go up. Iron pipe will not be far behind. Boilers and enamelware are expected to follow too. No raw material is cheaper—many things are dearer—a higher level is bound to come.

But to be forewarned is to be forearmed. Those who retail these things will be able to secure for themselves a better margin of profit by ordering early. Those who intend to make tenders will save themselves from possible loss by remembering the rising market as they figure.



# Complete Course of Sheet Metal Work

By L. W. KOSER

Prob. 1, plate 17, shows the method of developing a cone.

First draw the plan Fig. 1, having the diameter of the circle to correspond to the diameter of the base of the desired cone.

Step the plan off into equal spaces and number each.

Draw the elevation Fig. 2 which represents the height and gives the slant or pitch of the cone as A, B, C.

With the point of the compass set at A, and the lead at B, and with any convenient point as centre, as S, describe the arc N, M, Fig. 3 and lay off on this the stretchout of Fig. 1; draw lines from the points 1, into the centre, as

shown by the lines N, S, and M, S, and the pattern is developed.

Prob. 2 shows the method of developing the frustum of a cone with its top cut off parallel to its base.

Draw the plan Fig. 1 and step it off into equal spaces.

Then draw a complete cone as shown by the elevation R, B, D, Fig. 2.

Then draw the line A, C, showing where the cone is to be cut off at.

Set the point of the compass at R, and the lead at D, and with any convenient point as S, describe the arc N, M, and lay off the stretchout of Fig. 1.

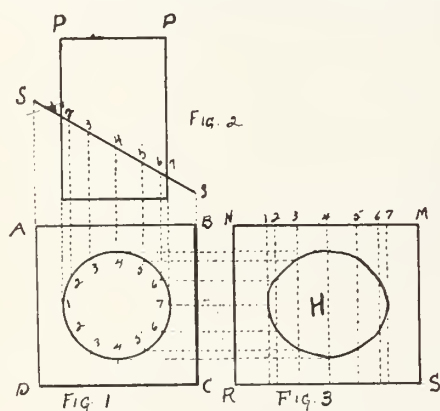
Draw lines from the points 1 into the point S.

Then set the point of the compass at R, Fig. 1 and the lead at C, and, with S, as a centre, describe the arc O, P, cutting the lines N, S, and M, S, thus completing the pattern.

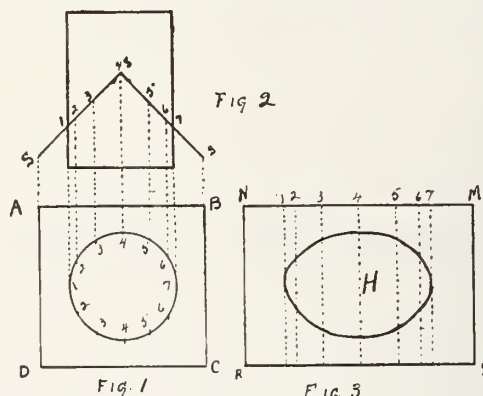
Prob. 3 represents a frustum of a cone used as a transition piece to connect a large and a small pipe running in the same direction.

The method of developing is the same as Prob. 2.

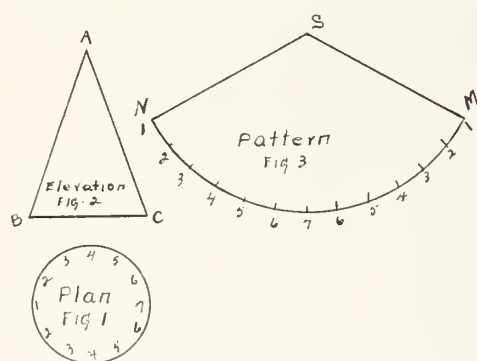
Prob. 4 shows the pattern developed for a bucket or pail. This is a frustum of a cone inverted or turned upside down, and is developed the same as explained for Prob. 2.



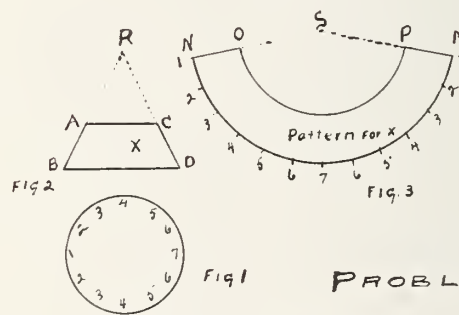
PROBLEM NO. 19



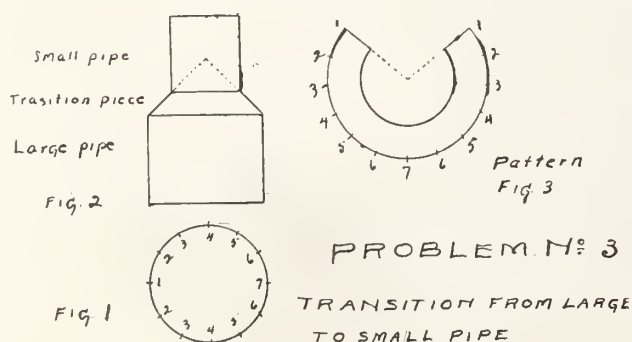
PROBLEM NO. 20



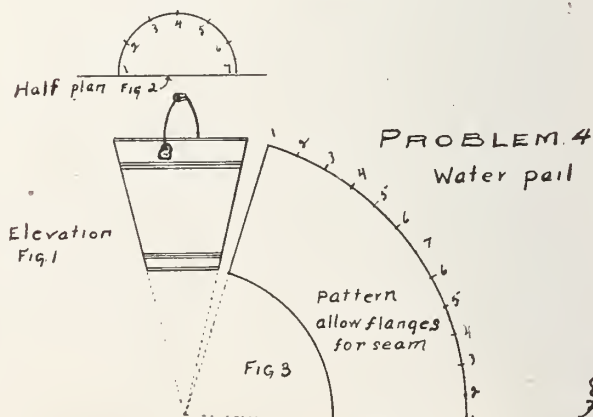
CONE SHAPE OR FLARING WORK  
PROBLEM NO. 1



FRUSTUM OF A CONE  
PROBLEM NO. 2



PROBLEM NO. 3  
TRANSITION FROM LARGE  
TO SMALL PIPE



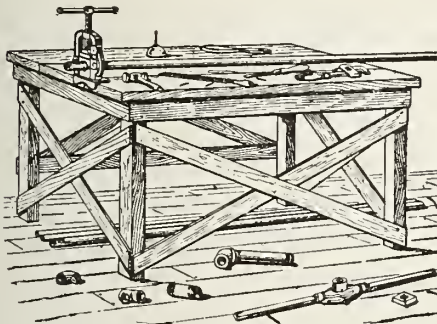
PROBLEM NO. 4  
Water pail

# Tips for Helpers---By "Phoenix"

## TIPS FOR HELPERS---CHAPTER 2. By Phoenix.

Take it near and far, there isn't a better place in the wide, wide world that will better develop common sense than a plumbing and heating shop. The advantages are unusual. You get a look at all kinds of building construction from the humble cottage to the forty and fifty storey skyscraper.

The boy of to-day should cultivate the natural common sense that lies within him. Cultivate, I say, for we all of us have a goodly bump of that old "horse sense" of our parents and grand parents. Some have it developed to a high degree, while with others it always



A WELL PUT UP BENCH.  
NO ORDER. THE  
TOOLS SCATTERED.

remains dormant. It appears to me that, in this day of specialists, the common sense is in danger of becoming crowded out.

It looks to me something like this:— Fifty, or even forty years ago, a man just naturally had to do things. No matter what it was he questioned around in his noddle until he found some natural practical way out of it. He wasn't so heavy on the education or the specialization, but he was great on the DO. A common, two-headed grimy patched youngster of ten or twelve years of age could probably tell you the name and use of every tool he had ever seen and the chances are that he could use any or all of them passably well. He had to. Not because he wanted to, particularly, but in order to help out in the daily struggle for existence.

He helped around the farm, the home, and many times was "bound out."

Take a boy of the same age to-day and—well there simply is no comparison so far as the knowledge of work in life is concerned. Perhaps I am talking against all progress and education, but "facts is facts" and they will bear me

out. Look for yourself and make comparisons. To a certain extent this is true to-day in the United States. The West is very much more self reliant, more on the DO line than is the East.

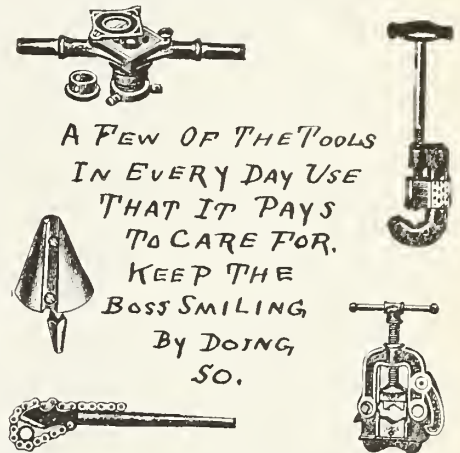
What's all this got to do with the helper. It has all in the world. I am trying to get him to a frame of mind to observe that he has common sense, and then to make use of it. I made a somewhat similar series of remarks once to a very talented writer and he said, "Why all our trade schools teach their pupils such things." I venture to differ.

Any school teaches according to certain lines laid down by persons of more or less wisdom. The best and only true teacher is experience and that's what you get every day in the shop. School and the shop taken together are all to the mustard; but either alone is just about half a loaf—better than none but still far from satisfactory.

"Lou" try and get over being dumb. Gather up your natural wits, sense, sand and gumption and apply it to your every day life. Now there's such a simple thing as a work bench, but just the same only about three fitters out of seven can make a good solid reliable rigid bench. For the sake of being more definite I have given a picture of one that will stand about all the banging one cares to give it. There is more depending on a good bench than you have any idea of. If it's springy or weavy, the fittings can not be made tight upon the pipe and no fitter is going to run the threads clean upon a piece of pipe that is not solid in the vise. Result, leaks, bad temper and lost time and money. Perhaps getting "fired." It's the helpers' business to make a bench. Take time enough to make it right. The one shown is easy to make and is well and practically braced. A box or barrel standing near by will be far more convenient for the tools than scattering them on the floor. I want to say that it is not always possible to make a bench like this. Many times the job will not last long enough to warrant it. Again, the lumber or time may not be forthcoming, but in any event whatsoever, you can make solid and secure whatever kind of a bench the job demands. Then there's the tools. For your benefit we show a few. The stocks and follower, a cutter and reamer, a chain wrench and a vise. Many others are used from necessity or the fancy of the fitter. Somewhere we will try and give a complete list and perhaps how to use them. It is

the helpers duty to look after the tools. Perhaps you'll say, "Does the helper do everything?" Well, pretty near it soon before he gets through. That's what he's for—to help—and, quite incidentally perhaps, to become a fitter or plumber as the case may happen to be.

The tools to work to the best advantage should be kept clean, unrusty, sharp and complete. A pipe cutter with a worn pin will allow the wheels to wobble. Result, nicked edges, unevenly cut pipe. Then the dies will not catch correctly and poor threads will result which means leaks later and all sorts of trouble. Thus you can see that there is a whole

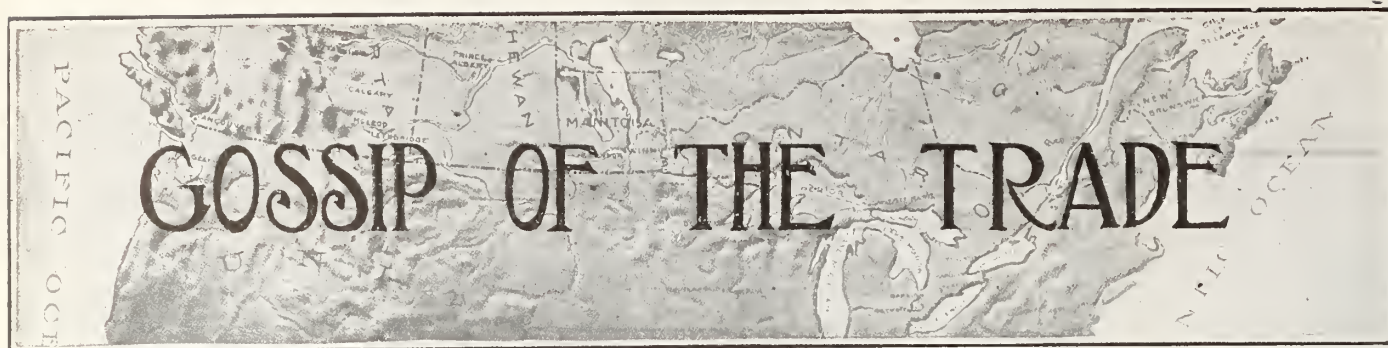


chain of events that can start from so small a thing as a worn out cutter pin. More in next chapter. Meantime practice in your bump of horse sense.

### School Contracts Let.

Saskatoon, Sask.—At the meeting of the Saskatoon public school board yesterday afternoon the most important topic discussed, and that which took up most of the time, was the matter of tenders for the plumbing, heating, and ventilation of schools number one and two, which are Westmount and King George respectively. It was finally decided, after a vote was taken, to accept the tender of Cotter Bros., of Saskatoon and Winnipeg, which was \$28,181-10c for Westmount and \$28,410-50c. for the King George school or a total of \$56,-591-60c. Regarding the apparatus to be used in the work, the plans call for the Buffalo Forge system of ventilation, and a trial made in each school of the National and Powers temperature regulation, also one in each school of the Richmond Rotrex ventilation apparatus.





#### New Firm Start.

Winnipeg, Man.—Stoney Bros. have started in the plumbing business here.

#### Adam Bole Drowned.

Winnipeg, Man.—Adam Bole, a young plumber, 20 years of age, was drowned in the Red River near River Park.

#### Partnership Dissolved.

Ottawa, Ont.—The firm of Blyth & Holloway, plumbers, have dissolved partnership. J. T. Blyth will continue the business.

#### Warden King Addition.

Montreal.—Work has been started on the \$5,000 addition which Warden King, Limited, are making to their foundry on Bennet Avenue.

#### Awarded Contract.

Montreal.—J. A. Gordon has been awarded the contract for plumbing, heating and ventilating work to be done on the Canadian Society of Civil Engineer's Building, Mansfield Street.

#### New Plumbing Firm.

Montreal, Que.—The J. P. Sullivan Co., Ltd., have been incorporated, with head offices in this city and a capital stock of \$50,000. They will engage in all kinds of sanitary work.

#### Annual Excursion.

Toronto, Ont.—The annual excursion of local union No. 46 will be held on July 27, to Grimsby Beach, one of the best picnic grounds in Canada. A good programme of games has been arranged. The boat leaves the Yonge St. dock at 8 a.m. and 2.30 p.m. Tickets will be 60 cents, for children 30 cents.

#### An Object Lesson.

Weyburn, Sask.—Gallager and Walker have received the contract for the plumbing work on the McKinnon Co's. new block. Also the plumbing, heating and ventilation of the Post Office and Collegiate Institute buildings. The latter will cost about \$12,000, and include shower baths and a fully equipped mod-

ern domestic kitchen, electric fan ventilation, etc. They will be an object lesson in modern equipment.

#### Must Not Raise Service.

Toronto, Ont.—R. C. Harris, Commissioner of Works, has issued the following notice: "It is found that certain builders, plumbers and drainmen throughout the city, when engaged in the construction of new buildings, raise the water service to the surface of the ground in order to facilitate their building operations and to avoid the expense of providing proper equipment. Notice is hereby given that any such action will result in prosecution of the offender."

#### Billy and the Twins.

This is a photograph of "Billy" Downs, traveler for the Detroit Ideal Co., with his family. The twins were presented to him seven months ago and they are thriving, healthy youngsters. Both are girls, Grace and Isabel. His eldest daughter, Aileen, is 5 years old.

Only the intimate friends of Billy know anything about the existence of



Misses Grace and Isabel, and the publication of this photograph will, we feel sure, create a mild sensation in the trade. Billy doesn't look the part of a father of twins. The twins will be grown up almost as soon as he will. Very proud of his pretty little family is Billy, and his only regret is that one of the twins was not a boy to sell goods some day.

#### Strikers to Start Business.

A despatch from Windsor reads:—Windsor, June 30.—The continued refusal of the firms by whom they were formerly employed to accede to the demands of the striking plumbers and the helpers has decided them to embark in the plumbing business on their own account and steps have been taken to organize a co-operative association.

Officers will be elected and headquarters opened in this city on Tuesday, after which the strikers say they will go after new business. There are about 45 men on strike.

#### TAPPING WATER MAINS.

Editor Plumber and Steamfitter. — One of your papers came to my hands, and I want to ask a question. The other day they tapped the water main in front of my house, and before they did so the man had the water all shut down. We could get no water for more than two hours, and when they let the water on again the meter in my cellar broke. Can you enlighten us?

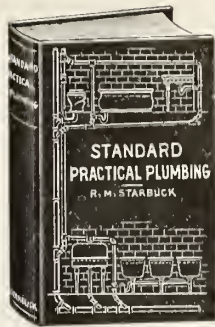
Reader.

Unless the man who tapped the main had a very poor machine or one in which the packings were in bad condition, there was no necessity for cutting off the city water. He must have been inexperienced or careless, as proven by the fact that your meter is broken. They probably let on the pressure far too quickly, and if you will make inquiries you will undoubtedly find more than one meter damaged. We once observed a case where the pressure was turned on too fast where it smashed two ells on a 6-inch main, necessitating the closing down of the entire system for over 24 hours, as it was on the main line of the waterworks system. There are plenty of good tapping machines, whereby the main can be tapped safely, while the pressure is on.—D. C. H.

#### Firm Dissolved.

Winnipeg.—Main & Flett, plumbing and heating contractors, have dissolved partnership, David Main continuing.

Spain & Kennedy, plumbers, of Vancouver, have dissolved partnership. T. F. Kennedy continues the business.



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## Standard Practical Plumbing

By R. M. Starbuck

347 SPECIALLY MADE ILLUSTRATIONS

PRICE \$3.00

"Standard Practical Plumbing" is indispensable to the Master Plumber, the Journeyman Plumber, and the Apprentice Plumber. As the book is specially strong in the exhaustive treatment of the skilled work of the plumber, it commends itself at once to every one working in any branch of the plumbing trade. Send for it to-day.

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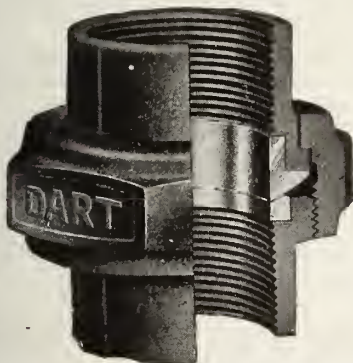
Bronze on both faces of the joint, it will never rust or corrode.



The ground ball-shaped seats allow a quickly and easily made connection whether pipes are in or out of line.

YOUR JOBBER  
HAS THEM.

Every Dart Union has the Trade Mark cut on it and a 2 for 1 guarantee too.



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## "ASTORIA" Closet Combination

Pays Good Reliable Profits



This closet is, we believe, the most sanitary on the market.

The Closet is square at back and oval in front, which gives a LARGER WATER SURFACE than closets differing in shape. Can be flushed with a pail of water in case the water supply is cut off.

The "Astoria" is practically noiseless, can be furnished with low-down or high-up tank, or with the Nethesy patent flush valve (dispensing with tank directly to closet).

Cabinet work is highly polished and furnished in Natural, Antique or Flemish Oak, Natural Cherry, Mahogany, Bird's-eye Maple, etc. KEEP A SAMPLE IN STOCK and see how many you can sell.

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Manufacturers and dealers in a complete line of Plumbing and Heating Supplies.

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### SITUATION VACANT

WANTED—AT SAULT STE. MARIE, ONT.—plumber and steamfitter. Cochrane Hardware, Limited. (15)

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— To Canadian Plumbers and Steamfitters:

By sheer force of merit, National Valves have won the confidence of discriminating plumbers and steamfitters throughout the United States and other countries, and we are positive the same degree of favor will be accorded them by Canadian users directly their many good qualities are made known.

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Our line is quite complete, embracing all kinds of Automatic Air Valves, Thermostatic Valves, Paul Valves, Vacuum Valves, etc. Write us to-day for the complete descriptive folder.

— To Canadian Dealers:

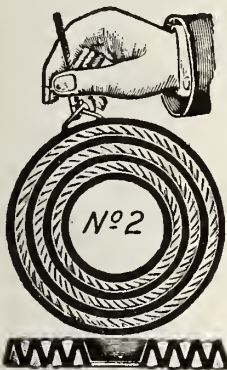
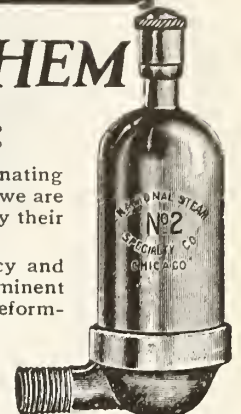
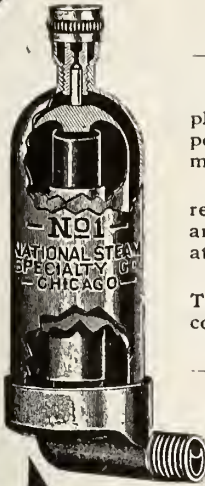
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See Sweet's Index, Pages 1139, 1140, 1141



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ELASTIC CORRUGATED COPPER—WITH ASBESTOS LINING

In these gaskets are combined all the strength and elasticity of copper with the heat resistance and "pack-ability" of asbestos. They make positively and permanently tight joints in flanged piping where nothing else will—where the best of other gaskets fail.

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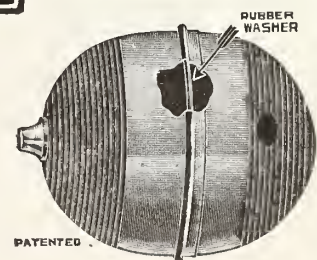
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**Reinforce the Efficiency of Your  
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do you prefer—to pay two men to thread a 2 in. pipe with an ordinary die stock, or pay one man to do it with a

## **“Beaver” Adjustable Die Stock**

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Each “Beaver” stock contains one set of dies which can be used to cut four different threads—a twist of the wrist sets the size.

This eliminates the buying of three die sets, and the loss of much time that is incurred through sorting out dies for certain work.

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Get our quotations on power machines, any size from  $\frac{1}{8}$  in. to 12 in., motor, belt, gasoline or steam driven.



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The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

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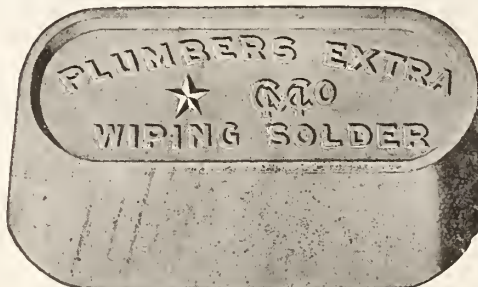


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IT WORKS LIKE  
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FOR A FIRST CLASS JOINT GET  
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**The Canada Metal Co., Limited,**

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**JENKINS BROS.'**

GUN METAL AND IRON BODY  
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*Special Features:*

Highest Quality Steam Metal. Perfect Interchangeability. Double Compensating Bronze Wedges. Metal Gland in Stuffing-Box. Great Strength of All Parts. Carefully tested to 250-lbs. Water Pressure

**UNRIVALLED IN DESIGN AND WORKMANSHIP**

A Thoroughly Reliable Gate Valve for Steam, Water, Oil, Gas or Air. A trial will convince you that it will pay you to use these valves on all your work.

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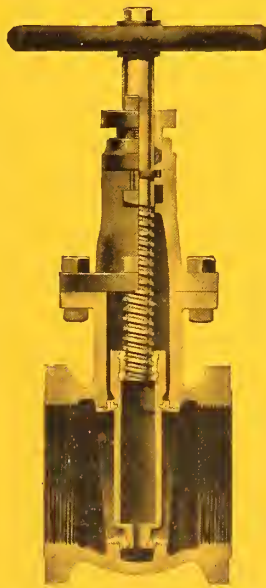


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Vol. VI.

Publication Office : TORONTO, AUG. 1, 1912.

No. 15



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HIGH BACK SINKS with Improved Outlet and Large  
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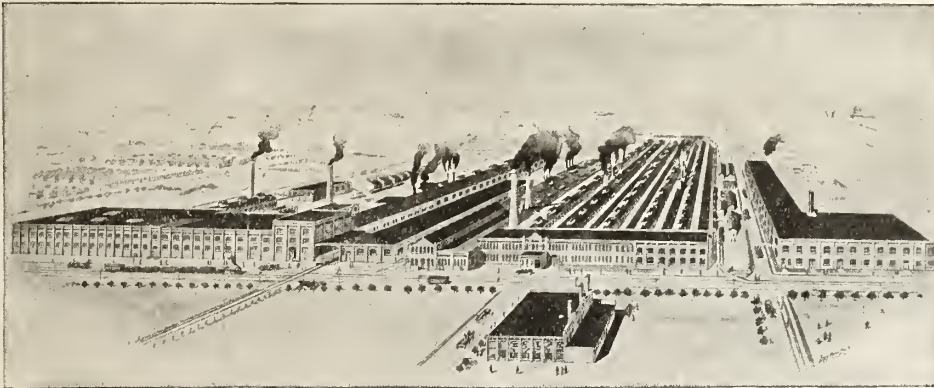
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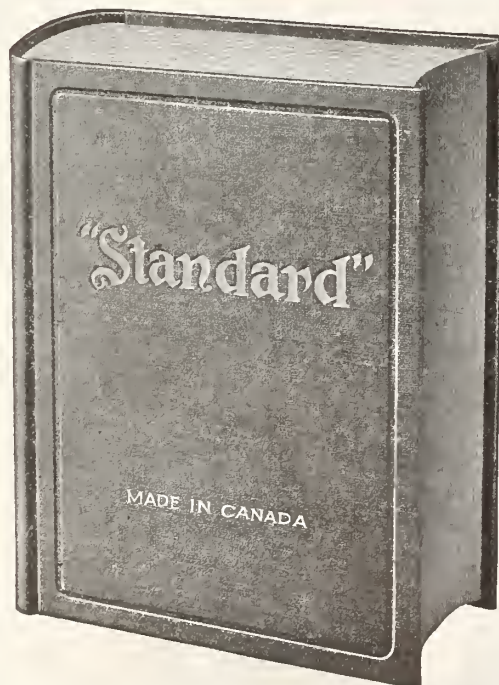


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It is the result of over 50 years of careful study of the hot water system of heating. Many exhaustive tests were made before the perfected boiler was placed on the market.

The "Daisy" Boiler is giving the Best of Service in over 50,000 buildings throughout Canada.

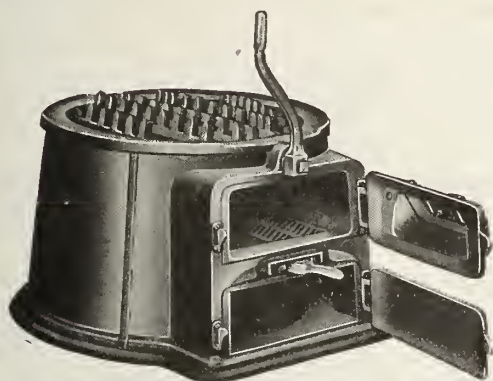
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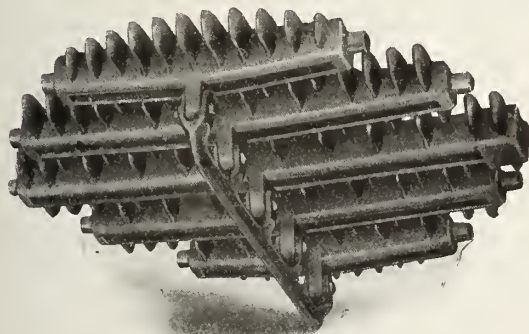
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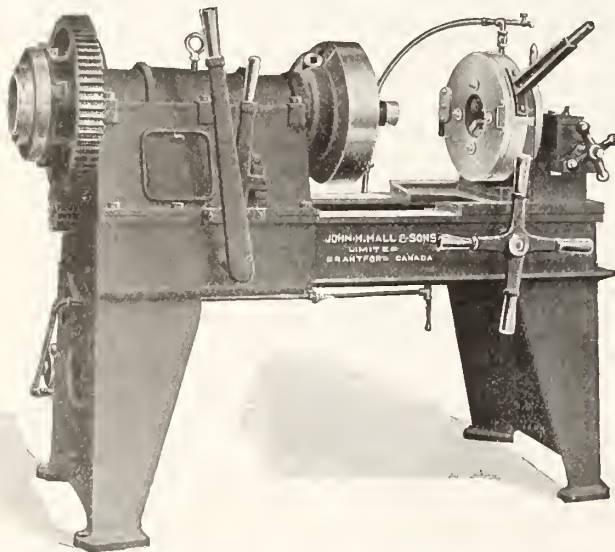


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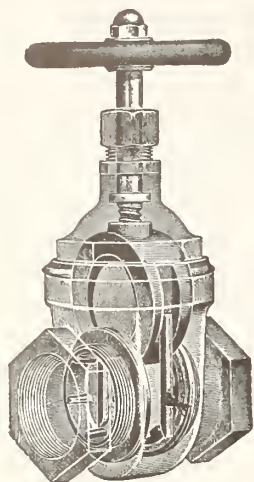
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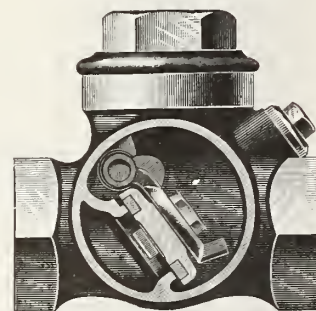


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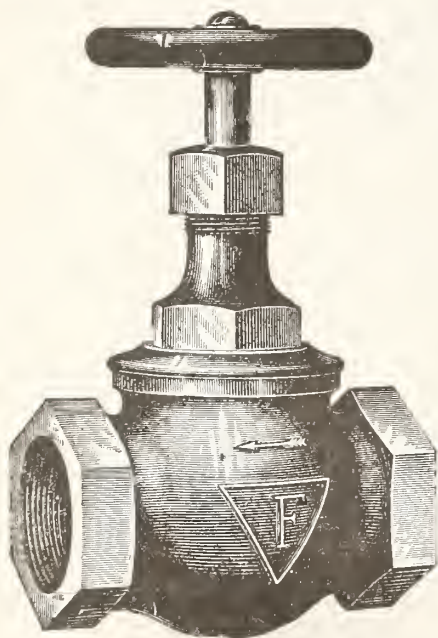
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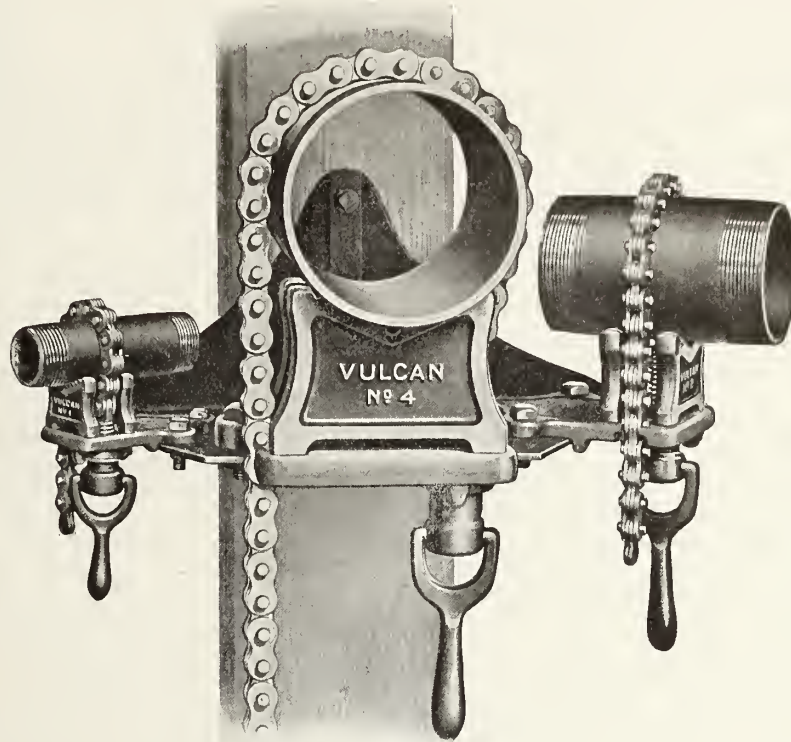
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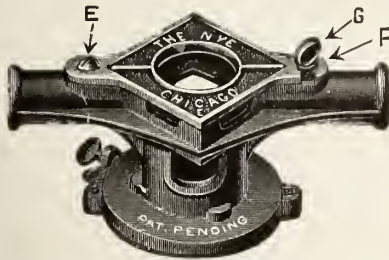
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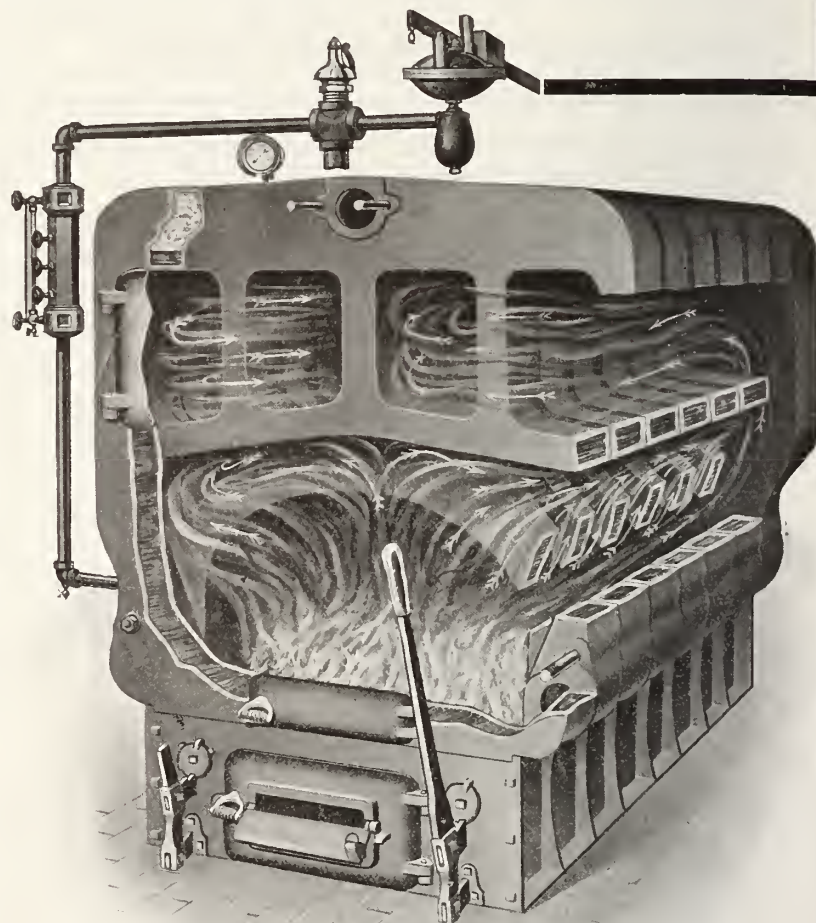
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# Annual Convention Held at Calgary

Canadian Society of Sanitary and Heating Engineers Meet at Calgary—Attendance Was Large And Representative—Opening Session Marked by Addresses of Welcome From Mayor And Representatives of Various Bodies.

CALGARY, July 18.—The seventeenth annual convention of the Canadian Society of Sanitary and Heating Engineers, opened in Calgary, July 18th, 1912.

The majority of the delegates had assembled the day previous, and all were on hand for the opening session, and the number being so large, there was evidence that the convention would be a great success.

The day was very fine, and the city represented a very inviting appearance. Everybody was in splendid spirits when J. E. Young, vice-president of the society opened the session by calling on acting Mayor Hornby to give the address of welcome to the delegates.

#### Mayor Extends Welcome.

Mr. Hornby said in part,—“You are to be congratulated on the splendid showing you have made at this early date of your convention, and it augurs well for the success of your convention to see so many delegates present on the opening day.”

“You cannot estimate the value of the work you have to do, and we trust you will be successful in arriving at ways and means for the development of your profession. Times have changed very rapidly in the memory of old timers,

who have seen great progress along sanitary and heating lines. We believe our city is well up to the mark as regards present day improvements, but would ask you to make a study of our city, and give us advice on matters of sanitation, sewage disposal, etc.” Mr. Hornby concluded his remarks by sending the glad greetings of the city to the delegates of the convention.

#### R. B. Bennett Speaks.

Mr. Young then called upon R. B. Bennett, K.C., M.P., to address the delegates. Mr. Bennett opened his remarks by stating that he was not altogether qualified to speak intelligently along the lines of the convention work, but during the course of his remarks he demonstrated an aptitude to discuss sanitary and heating questions in an intelligent manner. He said that “progress is the keynote of our times, and this means that men are devoting their energies towards the betterment of conditions among their fellow-men. It is important that we should have men qualified to keep up sanitary and heating conditions, and in order to do this we must have conventions. Men must meet one another to discuss the problems which tend to impede the progress of the science. The West wants the best, and this

is demonstrated by our city, which we consider is a tribute to the progress of our time.

“There is nothing more striking in this our day and generation, than the progress that is being made along sanitary lines, and great responsibility rests upon men in the business to further that progress, and the progress itself is an inspiration to all of us to do our best. There are no branches of science so important as those which touch life, and men interested in sanitary work are great servants of society. You cannot have a moral society unless you have a good physical basis for it, and the foundation of social progress depends upon the progress made along technical and scientific lines.”

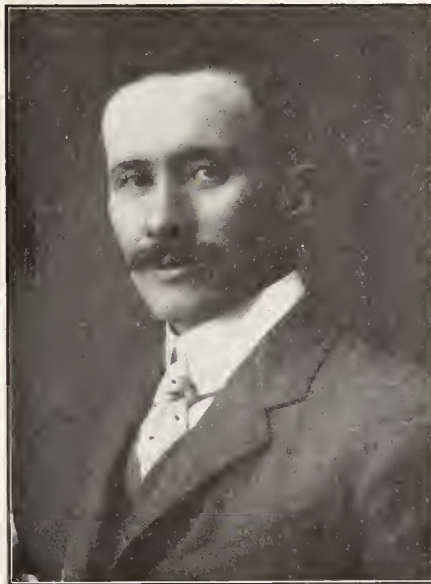
In concluding, Mr. Bennett told the convention that he had a letter from Mr. Birrell, M.P., Minister of Agriculture, that Dr. Hodgetts, who is connected with the Science Department for the Dominion Government would be here before the close of the convention to address the delegates.

#### Welcome From Builders.

J. W. Richards of the Calgary Builders' Exchange, next addressed the delegates, and welcomed them on behalf of the Calgary Exchange. Mr. Richards



H. MAHONEY  
Vice-President



E. J. YOUNG  
President



J. MARR  
Secretary

NEW EXECUTIVE OFFICERS OF THE SOCIETY





A view of the assembly hall on opening day—President Walsh is shown in the upper left hand corner.

stated that the steam-fitters and heating engineers were sort of handicapped in the matter of gaining glory for their work, as their work did not appear on the outside for public inspection, but their work which was delicate and scientific was in the dark basements, and in the walls, yet the fact remains the glory was there though hidden.

#### A Trail Blazer.

Mr. Macdonald on behalf of the architects of Calgary welcomed the delegates of the convention, stating that he was a "trail blazer," and had seen in his career great development along architectural and sanitary and heating equipment. He stated that he has known whole structures to be spoiled by poor workmanship by sanitary and heating engineers, and he knew that the work of the convention meant the betterment of the workmanship. He wished the convention all success in its endeavor during this convention, and in all future occasions.

J. E. Walsh, of Montreal, president of the society, formally thanked those who welcomed them so cordially, and stated that they would do their best to follow advice given, and that they were encouraged by the statements which had been made regarding the responsibility which rested on men in the craft.

Alderman Yeomans, of Toronto, rose to second the vote of thanks, and ex-

pressed the great delight which the delegates had in visiting the Western country. Eastern men, he said, have a very good time when they get together in the

ance at the convention, but he noticed the chief of police was absent from this convention. He believed that the good reputation of the Eastern men had been forwarded, and that they saw no need of a policeman in their midst.

That concluded the work of the morning, and the convention adjourned until 3 p.m.

E. D. Higginbottom, of Fort William, Treasurer of the society, sat at the receipt of customs almost constantly during the day, and gathered in the fees. Next he was seen going to the bank with a substantial wallet.

#### Executive Met.

At 3 p.m. the executive of the convention met, and there were present, J. Watson, Secretary; J. E. Walsh, President; E. G. Higginbottom, Treasurer; F. G. McKnight, Edmonton; H. Mahoney, Guelph; Mr. Frankland, Toronto; E. J. Young, Vice-President, Calgary; L. LeGrow, Toronto; J. Priestly, Calgary; William Mansell, Toronto; J. Marr, Toronto.

The work of the executive was to plan the work of the convention, and to go over the reports of the various officers and representatives, of the Provincial Societies. These reports were submitted the following day of the convention.



John Watson, Secretary.

East, and Western men had a very good time when they met, but when the East and West meet they surely do have a lovely time. In the East, he said, the Chief of Police was always in attend-



# Reports of Officers are Submitted

Best Part of Day Devoted to Reading Important Communications From Officers and Committees—A Great Many Important Recommendations Made — Apprenticeship Indentures Submitted—Progress in Organization Work Shown.

**P**RESIDENT Walsh called the men to order at 10.15 Friday morning, and called for the report of the credential committee. This committee which had been appointed the previous day consisted of Mr. Higginbottom, Fort William, and Mr. Waltz, Port Arthur. The report of the committee was as follows:

## Delegates Present.

President J. E. Walsh, Montreal; Vice-President E. J. Young, Calgary; Secretary, J. Watson, Montreal; Treasurer, E. D. Higginbottom, Fort William; Provincial Vice Louis LeGrow, Ontario; Provincial Vice G. F. McKnight, Alberta; F. Frankland (Proxy) Nova Scotia; J. Hillier, Quebec; W. Jennings, Manitoba; Harry Potts, Sask.; New Brunswick. Proxy. A. Malcolm, F. Smith, G. E. B. Grinyer; Saskatoon—W. Watts, H. H. Elford; Moose Jaw,—W. T. Bayliss; Vancouver,—S. A. Wye, J. S. Anderson; Montreal,—J. A. Gordon, Jas. Ballantyne, A. Gardner; Edmonton,—J. A. Mackenzie, A. Lee; Toronto,—Geo. Clapperton, Ald. R. M. Yeomans, Wm. Mansell; Nelson, B.C.,—E. K. Strachan; Guelph,—H. Mahoney; Twin Cities,—W. Miller, A. Cameron, A. C. Waltz.

Other members present. — Messrs. Bradshaw (Lethbridge); Lockerlie (Edmonton); Eggett (London); Priestly (Calgary); E. L. Martin (Calgary); Grant (Calgary); Carse (Edmonton); Galloway (Edmonton); McVeigh (Calgary); Marr (Calgary); J. A. Caslake (Collingwood).

The minutes of the last convention were adopted without reading, the chair stating that the delegates had all read the minutes as published in the convention report, and also in "Plumber and Steamfitter."

Mr. G. F. Frankland, associate secretary, read the rules for the transaction of business for the convention, and the brief minutes of the meeting of the executive, the previous day, were also read by Mr. Frankland.

President Walsh then referred to the communications which had been received by the secretary during the year, which were quite voluminous, and without reading same, it was moved by Mr. LeGrow, and seconded by Mr. Gordon, of Montreal, that these communications be referred to the select committee, which committee was appointed later in the day.

President J. Walsh read his address, which was as follows:—

## President's Address.

To the Officers and Members of the Canadian Society of Sanitary and Heating Engineers:—

Gentlemen:—  
Under ordinary circumstances, the writing of a report is a tedious and

thankless task, but under conditions such as have existed during the year now drawing to a close, tediousness becomes a pleasure and thanklessness a nonentity, for progress is the dominating note of the paper I am pleased to submit to you, progress, clothed in its gladdest and most convincing raiment. Under the name of the Canadian Society of Sanitary and Heating Engineers, the tree planted by the national association of Master Plumbers, which was not only sterile, but apparently lifeless, is to-day fully revived, much larger in size, and, moreover, laden with golden fruit. This golden fruit is the fruit of progress, which has not yet been plucked, but which is to be confided to the care of incoming officers, with the sanguine hope that they will tend to it carefully and increase it in numbers, and even in size.



President Jas. E. Walsh, of Montreal, who presided.

Thanks principally to the able and energetic efforts of your worthy Secretary, who filled both the offices of Honorary and Assistant Secretaries, we have been enabled to accomplish much that is pleasing to your Executive, and which, no doubt, will equally appeal to you.

Of this work, in order to avoid unnecessary repetition, as it shall be recorded in detail by your Secretary, who has borne the lion's share of the labor, special mention is made solely of the most noteworthy achievements, namely, the formation of the Ontario and New Brunswick Provincials, followed in close order of merit by the drafting of the new Constitution and By-laws, which shall be submitted for your approval or amendment.

It is not necessary to dwell on the benefits to be derived from the existing Provincial Societies, so I shall pass to

the emphasizing of several suggestions, some of which have been proposed at different conventions, but not absolutely carried out. Above all, let our claim be to encourage business friendships congenial competition, yet generous rivalry, which is the only manner in which we can uplift the trade to the position it should occupy. Let concerted action be our motto in all our various dealings.

Last year, among others, we took up the question of the General Contractors and the Supply Houses and of the Architects. We asked especially for the separation of the technical plumbing and heating trades from the general contractor. Much work has been done along those lines by your Secretary, but every sanitary and heating engineer must, once and for all, fully determine to abide by the rulings of the Association and desist in future from tendering for others than the owners, architects, or special engineers. So far as the architects are concerned, they appear to recognize the justice of our claim, and are prepared to deal directly with us. Under the same heading, gentlemen, however, we have the question of the Supply Houses, which deserves our most sincere consideration, as they are so intimately connected with us. From our part there should not be the slightest spirit of dictation, but rather a feeling of a cordial business relationship, conducted to mutual advantage. We should ask for their co-operation which, when treating of reasonable and lawful subjects, they certainly would not and could not refuse. Before considering or passing any motion, however, we should in at least a spirit of courtesy, acquaint them with our wishes, and give them due notice, so that they might discuss the matter with us. I would, therefore, respectfully recommend that a general committee, say of five, be appointed by this Association, with the sole object of discussing matters of importance with the Supply Houses; this general committee to be divided into local committees, but the action of them all to be uniform and national, as far as local conditions permit. This matter is of vital importance to us, because in the past we have passed several motions similar to those of aggressive organized unionism, without any consideration whatsoever for the feelings of our Wholesale Houses, and have been in some cases unduly surprised at their slightest antagonism. Force is not right, but strength, however, should be our aim, in order to protect ourselves against the unjust treatment sometimes accorded by those who should really be our best allies. Strength, likewise, can only be obtained through numbers, and numbers can only be obtained through increased membership. With what we have to offer to-day, there





A bird's eye view of a section of Calgary, the Convention City.

is no reason existent why we should not swell our numbers, which should be the duty of every individual member. Yet, at the same time, I would add a word of caution to the Provincials to go slowly. Form your locals in a solid manner before attempting to build your Provincial on a permanent basis. Offer your prospective members something, and be certain that you truly have something to offer.

Regarding future officers of this Society, I would ask the Nomination Committee to allot positions solely to those who are willing to accept them and carry out the work. A negligent officer is a handicap and a nuisance to an energetic secretary, and, in some cases, an inestimable damage to an organization.

Before concluding, I wish to thank you all for the honor conferred upon me at your last Convention, and to thank my fellow officers and members for the hearty co-operation given me during my term of office. Special praise in this respect is due to your official organ, "The Plumber, Steamfitter and Sanitary Engineer."

In conclusion, it is my painful duty to record the sad loss we have sustained through the death this year of one of our oldest and most esteemed members, the late J. W. Hughes, of Montreal, than whom there has never been a more zealous Association member. He has gone to join the ranks of the great majority, while our hearts beat with sincere sympathy for the loving widow and children from whom he is parted. In this case, however, I am proud to mention that a worthy son is left to conduct the business of a worthy father.

Respectfully submitted,

J. E. WALSH,

President.

A great outburst of applause followed the reading of this address, and it was moved by Mr. Mansell, and seconded by Mr. Clapperton, that address be forwarded to Resolution Committee.

#### Vice-President's Address.

Vice-President Young, Calgary, read his address, which was as follows:—

Calgary, July 15th, 1912.

Gentlemen:—

As your vice-president, I beg to present the following few words as a slight report at this, the 17th annual conven-

tion of the Canadian Society of Sanitary and Heating Engineers.

On looking back over the work done during this year, it affords me great pleasure to note the great advances which have been made in association work, and in the up-lifting of our trade to a higher plane. While my place of residence, naturally keeps me closer in touch with the Western Associations than with the Eastern, still I find that even from reports that reach me from the East, the association work in that section is flourishing strongly, and needless to say nothing could point more strongly to the aroused interest that has taken place throughout the whole of the Dominion in our work, our aims and our objects.

It seems to me that the opportunity which the National body now has, is to consolidate all these local and Provincial organizations, is one that can hardly be surpassed, and I think that the time has come when we should make some determined effort to centralize more firmly the general scheme of organization. I am informed that Ontario has now strong Provincial organizations as well as the local. Further Eastern Provinces are also looking forward to consolidation. Saskatchewan and Alberta are practically Provincial organizations through the close working together of their local associations, and that the last report, Vancouver in B.C. is now again organized. Therefore, my statement, that the time is ripe for the great central body to endeavor to draw the cords that bind all these outside organizations to it a little tighter.

It is not my place to touch on Provincial or even local matters, as these will all be handled by the Provincial vice-presidents, but since the matter of a paid secretary was taken up at the last convention, and the services of one secured, the members will notice that it has been possible for the central office and sub-executive to go more deeply into subjects pertaining to association work, and by getting rid of a great deal of the routine, is able to devote more time to the really particular principles of our organizations. This has worked out so well that I would suggest that the Provincial Associations, or the local associations where there is no Provincial body, take up the matter of appointing

Provincial organizers very seriously. I trust that this is one of the subjects that will be discussed at this convention, as I hope to see the majority of the Provincial vice-presidents with us at the time.

I wish to extend my most hearty thanks to all those who have assisted me during my term of office, and I would also extend the same to our official organ, the "Plumber and Steamfitter," which has been untiring in its effort to promote association work in particular and the welfare of the Sanitary and Heating business in general.

The above report being respectively submitted at this, the 17th Annual Convention of the Canadian Association of Sanitary and Heating Engineers.

Vice-President,

E. J. Young.

It was moved by H. Mahoney, Guelph, seconded by Wm. Mansell, that this address be handed to the resolutions committee.

The treasurer's report was then submitted, and it was moved by Mr. Young, and seconded by Mr. Mansell, that this report be forwarded to the auditing committee.

Report was then read from Province of Nova Scotia, prepared by Mr. Dexter, Truro, N.S., who was unable to be present, and was represented by proxy Mr. Frankland, Toronto, who read the report, which follows:—

#### Report From Nova Scotia.

To the Officers and Members of the Canadian Society of Domestic Sanitary and Heating Engineers.

Gentlemen:—

In submitting my report re association matters in Nova Scotia, I regret not to be able to report progress.

Outside of the city of Halifax with some few exceptions there is practically no interest taken in association matters.

I would recommend that the National Association put a man on the road to talk association work, and get members into the local associations, and that an extra fund be raised by each local association to pay the expense.

It is simply impossible for the vice-presidents to do this work without a great sacrifice of time, which they can ill afford.



I congratulate the officers of the national association on their energy and work, and if this forward movement continues in the upper Provinces of Canada, I have no doubt but that we in the lower Provinces will be greatly encouraged.

We still hold our monthly meetings in Halifax, where we talk over the benefits of the association, and compare opinions for the good of domestic engineering, etc.

I regret that it is impossible for me to go to Calgary, and I further regret that I will not be able to meet again this year the friends I have made at previous meetings of our association.

Wishing you every success, I remain,

Yours sincerely,

(signed) F. Dexter,

Provincial vice-president for Nova Scotia.

## Report From Ontario.

Report from Ontario was read by vice-president LeGrow, Toronto, as follows:

To the Committee of the Canadian Society of Sanitary and Heating Engineers.

Gentlemen:—

At our last convention, held at the Twin Cities, 1911, the keynote most used was the necessity for Provincial organization. It was felt that local organizations could be best matured by direct Provincial affiliation; that the Provincial associations could more intelligently and systematically deal with local conditions; that Provincial and local affairs could be more in common because of a centralized and localized oneness; that the direct and personal contact existing would naturally promote the interests of both.

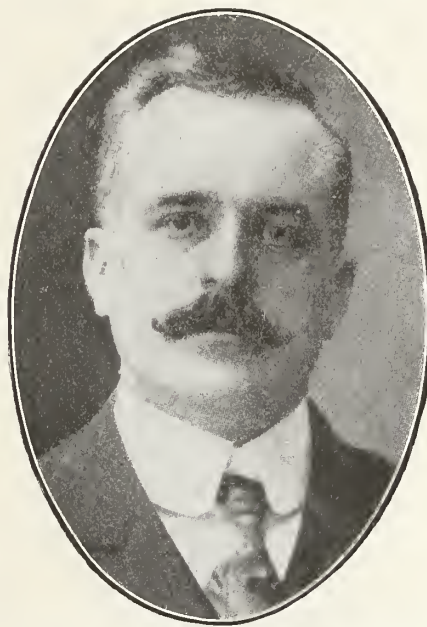
Acting on this suggestion your Provincial vice-president followed up the work of the last vice-president, R. J. Shannon, and in conjunction with Wm. Mansell, F. R. Maxwell, G. F. Frankland and the help and support of sanitary and heating engineers throughout Ontario, we have been successfully incorporated by Ontario Charter, September 28th, 1911. Thus we enter into a new epoch of Provincial work, and with it assume new responsibilities, and in assuming these responsibilities, we must, in order that the Ontario Society of Domestic, Sanitary and Heating Engineers should take its place in advancing the best interests of the people of this Province, recognize our interest and relationship in the welfare, not only of the sanitary profession, but in setting a standard for advancing sanitary thought and legislation by the people of this Province. We must educate the press and the public to understand that we are vitally interested in advancing the health standard of the people; that we do not desire to prevent any man from engaging in the sanitary profession, but we do desire to guarantee to the public that any man who is a member of this society is an honest, honorable and capable man whom they may trust to do their sanitary work in a proper manner, an educated and practical profession with a high ideal of what is

necessary and an honest determination to see it properly carried out.

We are offering no inducement to the man who would act the parasite when installing sanitary fixtures, and we propose to refuse to be guided by the dictates and orders of the minority of the public who would have us instal in their property a work contrary to the regulations of the municipality and a detriment to the health of the community.

We may expect that our intentions will be criticized and questioned by those who view everything from a party standpoint, and do not believe that we have any interest in advancing sanitary measures outside of what it may return to us in financial gain.

Let us take things quietly and gradually, our influence will teach the public that we are in earnest to see conditions of life improved in cities, more so than other citizens, as we know by experi-



F. Dexter, Nova Scotia, Vice-President.

ence how deadly is the effect of the lack of proper sanitary appliance in the home, and that this society stands for co-operation in any movement that seeks to advance the health of the community.

The First Annual Convention of the Ontario Society was held in Toronto on April 5th, 1912, when representatives were present from Twin Cities, Hamilton, Galt, Guelph, Preston, Berlin, London, Stratford, Collingwood, North Bay, Sault Ste. Marie, Sudbury, Bracebridge, Peterboro, Brockville, Ayr, Elmira, Wingham and others to the number of 85 members, when an active and progressive programme was mapped out for 1912 and 1913.

The lack of concentrated enthusiasm was very noticeable, but individual zeal was most pronounced. The delegates were conscious of the fact that old things and old methods were passing and a newer and a saner method was taking their place.

When the question of a permanent secretary was reached it was unanimous-

ly agreed that we appoint one, and ways and means would be provided.

The appointment of an examination committee was heartily concurred in, and good results are expected from its work.

A number of suggestions re Canadian Society affairs will be laid before you by the Provincial delegates. It seems to me that Ontario is fairly well organized with a strong Provincial organization, with a good board of directors and committee men of no mean ability, who will see that organization is kept well to the front and who desire to be of use to men engaged at the profession in any part of Canada.

Respectfully submitted,

E. Lewis LeGrow,

Provincial Vice-President.

This report was passed to the resolution committee upon motion of Mr. Cameron, seconded by Mr. Caslake.

Report from New Brunswick was then read, which report was prepared by Mr. Watson, Moncton, who was unable to be present, and was represented by proxy, Mr. Frankland:—

## Report From New Brunswick.

To the President, Officers and Members of the Canadian Society of Sanitary and Heating Engineers.

Gentlemen:—

I have the honor to submit the following report as Vice-President of the C.S. of S. & H.E. for the Province of New Brunswick.

The past year has been very successful for association work. It seemed to me in former years, acting in the capacity of Vice-President for N. B., that we would never make a success of getting our province organized. For many years out of the whole Province we only had a few members in the City of Moncton.

On March 10th, 1911, The Moncton Master Plumbers including all the Master Plumbers of our city decided to unite for organization. Yours truly was appointed president and L. H. Estano, secy-treas. Naturally the first matter talked over at considerable length, was the much vexed question of cheap plumbing. In discussing which question, each member took an active part. By August we were all getting so well acquainted and friendly, it was decided we would hold our first annual picnic, which was very successful in every way, and a very enjoyable day we spent with the member of the association and their friends.

Our association seemed to be progressing so well that we, as master plumbers decided to communicate with all jobbing houses, asking their support and co-operation in putting a stop to the small practice some jobbers were guilty of, that is, selling goods to private individuals. Our local sent circulars to twenty-seven jobbing houses and the majority replied very favorably and seemed willing to comply with our request.

Our local association having had such success with local matters, we started to look for larger fields to conquer, and we thought a provincial association should certainly be our aim, and having



a list of all the New Brunswick master plumbers, our secretary communicated with all of our province; the outcome of which was a convention of master plumbers of New Brunswick, at St. John, on April 9th, in Keith's assembly rooms.

Upon taking the chair at 10 o'clock, I called the meeting to order stating in effect that we as master plumbers were gathered to-day in St. John for the protection and uplifting of our chosen profession, also thanking all delegates for interest shown by attending this convention. Mr. L. H. Estano, of Moncton, was appointed secretary pro tem.

It was moved by Mr. Dorman, of Moncton, seconded by Mr. Blake, of St. John, that we proceed to form a provincial association. Carried.

On motion, Messrs Blake, of St. John; Marquis of Campbelltown; Shea of Fredericton and Fewer of Woodstock, were appointed a nominating committee. This committee having withdrawn, on their return reported that Mr Blake had been selected for chairman. This motion was carried unanimously. Mr. Blake accordingly took the chair, and in thanking the members for this honor, asked for their cordial support in the object of such a gathering, to advance the interest of their trade, and to bring about not only more fellowship amongst the members, but a better understanding with manufacturers and jobbers, as well as to secure as far as possible improved conditions as regards inspectors of plumbing, and consequent safeguard to the people in the way of plumbing installation.

On motion the following officers were duly nominated and elected:—

President, Mr. George Blake, St. John N.B.; Vice-President, Mr. D. J. Shea, Fredericton, N.B.; Secy-Treas., Mr. P. Campbell, St. John, N.B.; Sergeant-at-Arms, Mr. G. S. Dorman, Moncton, N.B.

At the roll-call there were thirty members answered to their names with several absent.

There are six local associations in our Province, St. John, St. Stephen, Fredericton, Woodstock, Campbelltown and Moncton. All were represented.

The St. John association entertained on the evening of the 9th by inviting the visiting members and friends to a banquet in the Victoria Hotel, which was a very enjoyable affair. Everything went off like clockwork.

The St. John men deserve credit for their assistance in the formation of the N.B. association, and are expecting now the assistance of the Canadian Society of Sanitary and Heating Engineers, in influencing the manufacturers and jobbers of the Dominion to use us fair. There have been some complaints from the St. John Association in regard to supply houses selling direct to the public, which I think should be dealt with and a better understanding arrived at along this line.

Our Moncton Local has been of great assistance in the past years, both in assisting to get the association so far along and also in promoting a better feeling among its members, who now

don't want to scratch each other's eyes out.

The N.B. association held their semi-annual convention at Moncton on the 25th of June in the Pythian Temple, which was well attended. All the locals were fairly well represented and one gentleman from Summerside, P.E.I., a Mr. Webber, wanted information regarding association work. All Summerside wants is someone acquainted with organization work and the Canadian society will have another Province included in the list of associations.

I thank you gentlemen for the honor you have placed in me in electing me to this office, and trust in the following year you will elect an officer better qualified for the office.

With best wishes for the convention at Calgary, I am,

Yours faithfully,

Wm. Watson,

Vice-President for New Brunswick.

On motion of Mr. Gordon, seconded by Mr. Watts, this report was handed to resolution committee.



L. LeGrow, Ontario Vice-President.

#### Report From British Columbia.

Report from British Columbia was read by Mr. Frankland, assistant secretary. Mr. Orr prepared the report, being unable to be present. The report is as follows:—

I sincerely regret my inability to attend the annual convention to be held at Calgary, but as Provincial vice-president of British Columbia, I wish to report to the convention the progress we have made in Vancouver towards organizing our master plumbers.

British Columbia is a young Province, and is growing so rapidly that the men in our line are all very busy, and though feeling the need of an association, could not spare the time from their business, to devote to organizing a society. Fortunately we obtained the services of Mr. J. O. Sawkens, a former master plumber, and an advocate of organization. He interviewed some of the lead-

ing master plumbers of our city and interested them in a scheme of organization, with the result, that we now have a splendid society with seventeen of the leading men of the profession, amalgamated into what I think will prove to be a great benefit, not only to the members, but to the community.

I might suggest that similar work could be accomplished in the other cities of this Province, if some person having the time to devote to it, would visit the several cities and thereby greatly strengthen the National Society. I would further state that no expense, to the society has been so far incurred by our organization.

Wishing you success in your convention, I am,

Yours fraternally,

P. Wallace Orr,

Provincial Vice-President of B.C.

Mr. Orr's report was referred formally to resolution committee.

After listening to reports from the various Provinces, the reports from the committee were received. The committee on legislation reported as follows:—

#### Legislation Committee Report.

To the President and Members of the Canadian Society of Sanitary and Heating Engineers.

Gentlemen:—

Your legislation committee beg leave to present their seventeenth annual report.

On May 20th, 1912, your committee were authorized by the secretary to get legal advice on the question. How far can our society go in compelling the supply houses to sell to the trade only.

Your committee were unable to get this advice for this convention. We would recommend that the chairman of legislation be appointed from the same city as the president or secretary.

That the legislation committee be empowered to get legal advice on this important matter, and report same to the executive at as early a date as possible.

Your committee feel that this is a vital question and of very great importance to our profession, all of which is respectfully submitted.

Harry Mahoney,

Chairman.

#### Report of the Sanitary Committee.

Acting under instructions from the sub-executive committee that we take into consideration the question of a standard ordinance to regulate the installing of all sanitary fixtures and domestic drainage in private houses and public dwellings, your committee took action by addressing letters to all plumbing inspectors, medical officers of health and superintendents of technical instruction in the principal cities and towns in the Dominion. These letters called for answers to the following questions:

1. Have you a by-law regulating the installing of sanitary fixture and domestic drainage, if so, would you send a copy.
2. Are you in favor of a standard ordinance for the whole Dominion?
3. Are you in favor of lectures on sanitation?



4. Are you in favor of examination, technical and practical, for both master and journeyman?
5. Are you in favor of a license for master and man?

To those who sent replies we take this opportunity of publicly thanking them for their trouble.

To the question referring to by-laws only a few had a modern by-law, and quite a number were drafting new ones while some had become obsolete.

From the information that your committee has in hand no serious obstacle seems standing in the way of an ordinance that would be applicable to the whole Dominion, but the framing of such an ordinance, your committee feels, should be drawn up by a committee under special Act of Parliament. Surely this is not too much to ask when we consider the amount spent on every individual born or brought into the Kingdom. Too much at present is left in the hands of local health committees who too often allow conditions to prevail which endanger the health of individuals if not actually sacrificing a life in the saving of a dollar, by failing to comply with modern standard ideas on domestic sanitation.

That our members will be able to take the examination which may be compulsory under a Dominion ordinance, application ought to be made to the present Government for educational facilities whereby all may be prepared.

Your committee has been able to secure Mr. T. B. Kidner, director of technical education in Calgary to give a talk on how we ought to be educated. We have also secured for your particular benefit, Dr. Hodgetts, who will give a talk on matters which will be of great interest. Will the delegates make special effort to be present at these lectures.

On behalf of the committee I respectfully submit the above.

Yours truly,

J. Marr,

Chairman.

The heating and ventilating committee report was read by Mr. Priestley, chairman, and was one of the most important papers presented to the convention. At the conclusion of this report it was moved by Mr. Gordon, and seconded by Mr. Watson that this report be sent to resolution committee.

It was moved by Mr. LeGrow, seconded by Mr. Cameron, that Mr. Priestley's report be submitted to a special committee to be appointed by Mr. Priestley.

After some discussion it was decided to refer the report to the resolution committee with recommendation to pass the report to a special committee, and the movers of the amendment withdrew. It was suggested, however, by Mr. LeGrow to take up Mr. Priestley's paper first, as it was very important, as there were many heating engineers present who might not remain until the last day of the convention.

## Report of Heating and Ventilating Committee.

Calgary, July 16th, 1912.

The Canadian Society of Sanitary and Heating Engineers, in Convention assembled, Calgary, July 18th to 25th, 1912.

Gentlemen:—

As chairman of the heating and ventilating committee, I submit the report on the work allotted at the last convention.

The most important matter taken up was the uniform contract. After careful consideration and examination of the present forms in existence we have arranged the present form attached to which we ask your kind perusal and consideration.

We also bring before your notice specifications for steam and hot water heating which we consider, if put into operation, would cover all districts and give general satisfaction to all members.

One of the great problems which we have to face in the heating and ventilating business (just as much as in the sanitary) is that of price cutting; and while education will eliminate this to a certain extent, still we think that if a general form of estimate sheet was arranged to be used by the members of the National Association all over Canada, it would assist materially in reducing this large and irritating phase of our business.

With such a form, many of those firms outside of the associations would try to procure copies, if for nothing else than the saving in time when estimating, and by this means great good should result.

We submit herewith a form for your consideration and would like to hear the opinion of the association on same; not only as a means to reduce price cutting evil, but also as a means to educate our own members in the proper laying out of a system.

This matter of estimating sheets, naturally brings us to a form of estimating on radiation and boilers.

While it is practically impossible to devise any formula that will meet with absolute acceptance all over the Dominion, still we think that it is possible by getting together and working with the object of getting something good, to evolve a system of figuring radiation, etc., that will meet with favor in all quarters, and allowing for a reasonable amount of common sense to meet any very exceptional local condition, will help in bringing heating down to a scientific basis.

One of the matters that brought this matter of a uniform method of estimating radiation home to us very strongly, was something that practically every community has to contend with, and that is the coming in to your own particular town of an outsider, who, not being conversant with local conditions in the way of temperature, dampness, high winds, or other causes of raising your standard of figuring above the ordinary accepted rule, figures according to the standard that applies to his own place of business, and generally gets below you through having less radiation.

He secures the contract, and should at a later period his system fail to give satisfaction, he is not in town to stand the blame, and the whole odium rests on the local firms.

This is a great question, and one that your committee does not feel themselves competent to handle without further advice, so we place the suggestion before the association to assist us to see some way out of this difficulty.

A good basis for such a uniform system of figuring would be that of a temperature grading, allowing each district a margin to work on, based on the average temperature in that particular section.

Another little thing that might assist to some extent (at least so far as association members are concerned) is the making of a rule in all the local associations as well as the Provincial and National ones, that every member of one association who enters into the territory of another association, must affiliate as honorary member of the latter, and work under their rules and according to their standards, if they have any fixed standard.

The above moves a trifle out of the field of heating and ventilating alone, but nevertheless would be a good thing for association work alone, if for nothing else.

Though a trifle outside of our Province, still this following subject is of such large importance and interest in view of the fact that the heating and ventilating business is growing more scientific every day, that we felt that our report would not be complete without touching on the necessity of educating our members (and especially the rising generation) so that as the large and ever increasing problems that arise for our solution come before us, they will find us capable and ready to handle them without fear and with every confidence.

We have written to the school boards of most of the large cities in the Dominion, and have received replies from quite a few; and we find that the general feeling is that the solution to a great many of the problems confronting us to-day, lies in technical education.

We do not find that this subject is taken up in the technical schools of Canada at the present time, but in nearly every case, the report has been that something should be done. We would respectfully call attention more particularly to the letter from Mr. T. B. Kidner, of Calgary, who goes into the subject somewhat exhaustively, and covers the ground that we would like to see discussed.

Signed on behalf of the heating and ventilating committee.

R. J. Priestley,

Chairman.

Chairman and Brothers Members of C.S. of S. & H. Engineers in Convention assembled at Calgary, Alberta.

Gentlemen:—

The essay committee of which I believe I am a member, failed to meet and formulate a paper to submit to this convention, owing to the unusual amount of time and work taken up in our local and



Provincial association work, but if I may be permitted to make a few suggestions on my own behalf, I would be very pleased indeed to bring before your consideration one of the most urgent and important problems of the day, i.e., the proper heating and ventilating of our public schools, assembly rooms, etc.

While the lack of time will not permit me to go into this subject fully at this time, I would suggest that a regular organized effort be made to secure the appointment of at least one or two heating engineers on every school board throughout the Dominion.

The average school board has no conception whatever of the necessities of furnishing pure air to a room packed full of children, and the architect employed to provide a proper system very often knows no more than the school board as to what the requirements are to properly ventilate a school room.

Every building constitutes a problem within itself, and can only be solved successfully by those who possess a knowledge of the principle that must be applied and the mechanical skill and experience necessary for a practical application of the work to be done.

We can therefore look for no improvement in our unhealthy school rooms and public places until we elect or appoint a fair representation of men on our boards that have a thorough knowledge and experience to devise a practical system for not only the building to be erected, but to also remodel and place every school room in the Dominion pure.

An expert ventilating and heating engineer should be made a member of the Provincial Board of Health in every Province. The plans of a heating and ventilating, as well as sanitary system of all public and private schools should be approved by the Provincial board of health before the building is erected. A standard of purity should be fixed, and a rigid enforcement of the standard maintained.

Child labor and compulsory educational laws should not be discouraged, but compulsory ventilation laws should take precedence. By giving the children good wholesome pure air to breathe in the school rooms as well as in the home you will reduce the mortality by a large percentage, greatly simplify the management of diseases and improve the health and vitality of the younger generation.

Respectfully submitted,

A. C. Waltz,  
Chairman.

Upon motion of Mr. Mansell and Mr. Elford this report was referred to resolution committee.

#### Apprentice Committee Report.

To the President and Members of the Canadian Society of Sanitary and Heating Engineers in Convention assembled.

The Apprenticeship Committee beg to Submit the Following Report for your Consideration:

For many years your different apprenticeship committees have year after year brought before the different con-

ventions valuable reports and recommendations, only to have same tabled or lost sight of. Your committee wish to question the members as follows:

What are the sanitary engineers and heating engineers doing at the present time to perpetuate our calling?

How many of us are training our boys in the art?

What is the practice of the majority of masters in the trade towards supplying artisans for the future?

What are we doing and what must we do to make our boys interested and willing to serve apprenticeship and continue in our footsteps?

Our present system of apprenticeship is a complete failure and some drastic measure must be introduced by this Canadian association of a uniform apprenticeship for the future of our calling, as this question is too great a problem to be undertaken by individuals. We in the East for years carried out a sort of rule of thumb system, and a very



R. M. Yeomans, who responded to address of welcome.

good class of mechanics were educated, but of late years it has been found impossible to get boys to undertake the serving of five years of apprenticeship unless they got wages at the start of their term, such as many of us received at the end of our time.

Another evil has been introduced in our shops, that is improvers. This has been caused by those who do not have any apprentices in their employ and who entice away from other employers, boys who have become useful and able to handle the tools in their third year, making an inducement of an increase to their apprenticeship wage to change their employer. This improver apprentice should be entirely wiped out, and only journeymen and apprentices recognized.

If we intend to keep up with the wonderful growth of our country and keep up the standard of our mechanics, we

must at once inaugurate a universal system or the trade of sanitary plumbing and domestic heating will be a lost art in the near future.

Your committee beg to recommend that a strong committee be appointed as soon as possible at this meeting to draft and bring before the convention an apprenticeship indenture for the adoption of our association, and also take steps to encourage in the larger centres, trade classes in connection with our technical schools.

All of which is respectively submitted—E. T. Needham, F. Maxwell, H. Hicks, Geo. Clapperton, Geo. Cooper, W. Mansell, chairman.

#### The Master Plumbers Association. Form of Indenture.

##### Apprentices.

1. Each apprentice shall be at least six (6) months in the employ of an employer before he shall be indentured.
2. Each apprentice must serve a regular apprenticeship of five (5) years.
3. No apprentice to be indentured younger than fourteen (14) years of age, and he must be able to read and write either French or English.
4. Every apprentice must reside with his parents or other legal guardian, and also must be of respectable parentage and of good character.
5. If the apprentice has studied for two (2) full terms in any of the recognized technical schools, and if he can produce a certificate to that effect, he is entitled to a reduction of six (6) months off for the two terms from his apprenticeship, this to be deducted from the last year of the said apprenticeship.
6. Having served his five (5) years apprenticeship, the apprentice shall be entitled to a bonus of (\$100) one hundred dollars, and if a plumbing apprentice, he shall be entitled to a kit of jobbing tools.
7. All lost time exceeding two weeks in each year, to be made up in the following year at the same rate of wages as previous year.
8. The master plumber must do all he can to afford the apprentice every opportunity in gaining knowledge of the trade, giving the apprentice such instructions and aid in acquiring the said knowledge as the said apprentice may be capable of understanding it.
9. The master plumber further binds himself to pay the following rate of wages; first year, 7c per hour; second year, 9c per hour; third year, 11c per hour; fourth year, 13c per hour; fifth year, 15c per hour.
10. All overtime to be paid at the same rate per hour as the men, viz; Time and one half until 12 p.m. Double time after 12 p.m. Sundays and legal holidays.  
The apprentice must not belong to any labor organization during his term of apprenticeship.  
The board of health must not issue any certificates to any applicant as a journeyman, unless he has first



obtained a certificate from an employer to the effect that he has served his full time as an indentured apprentice.

#### Report of Secretary.

To the Officers and Members of the C.C. of S. & H.E.

I hereby submit my annual report of this 17th annual convention for the years 1911 and 1912, and wish to thank the members for the confidence placed in me, and also for the honor conferred. I wish to specially thank the members of the executive committee for the help and assistance they have given during my term of office. The work at times has been somewhat hard, but it has been a pleasure to me to work for our cause. It is also an office of education. Your secretary has the greatest chance in the world to study human nature. He also gets to know that the mighty dollar rules this world and the vastness of this grand Dominion of Canada. I can safely guarantee that the next elected secretary will have the privilege of studying all those items.

I have mailed over 1,200 letters to the different officers and members of this society, and have received in reply over 200 answers. I have also written several letters endeavoring to convince some poor unfortunate sanitary and heating engineer that his only salvation is in having a society formed in his city or town, and this has had some good effect.

Our Provincial vice-presidents have done good work during the past year. Our membership has increased considerably, and we are on a fair way to make the work of this society felt throughout the whole Dominion. I am thoroughly convinced that our society can be organized by correspondence.

The executive committee has had considerable drawback to contend against this year on account of not having any recognized constitution, or printed forms to work from. We were not at all sure in many cases of the stand we should take when asked to give opinion on various subjects. However, one of the chief items to be taken up at this meeting will be the adoption of a good solid constitution, and also to take into consideration the several forms submitted by the sub-executive committee. We also want a proper file system in connection with this office. With the exception of last year we have very few records, although this is our 17th annual meeting.

I wish to draw the attention of this meeting to the mistake made at the last convention. You compelled a new society to pay an entrance fee of fifty dollars, or five dollars per member. I believe we would have had several new local societies join us had it not been for this heavy entrance fee. It was expected that this would bring in a revenue, but it has proven to have the contrary effect. I also claim that the annual convention has no right to decide the amount of the capitation tax. Your sub-executive is the best judge in this matter after they have estimated the expense of the next session, and levied the tax in accordance with their deliberations.

I was instructed to procure the necessary information for the compiling of a Dominion directory; this I have endeavored to do, but I am not satisfied that we have sufficient information to warrant the printing of this directory. I have endeavored to have the P.V.Ps. assist in this undertaking and the most of them have done the work well. The following is on file and should be taken up by the incoming secretary or by a special committee.

Master Plumbers	Province of	Alberta
"	"	Brit. Columbia
"	"	Manitoba
"	"	N. Brunswick
"	"	Nova Scotia
"	"	Ontario
"	"	Quebec

368 firms of architects reported from 27 cities, and 59 plumbing supply houses reported from 9 cities, with no report from Alberta on supply houses or architects.

In regard to the appointment of a paid secretary. It was decided at the last convention that this appointment should be made, and after a long discussion at



Wm. Mansell, chairman of Resolution Committee.

a meeting of the sub-executive held on the 25th Oct., 1911, this committee decided that the position be filled as soon as the elected secretary deemed it necessary. I did not find at any time that I could not keep up with the work of this office, but on several occasions I was compelled to seek assistance from outside; another reason I had was, it would take as much of my time dictating to an assistant as it would to do the work, seeing there was no constitution for his guidance. I am also of the opinion that a permanent secretary for this society will not work satisfactory. What is required is an elected secretary chosen from the same city as the president. They have the power to secure any assistance they require, also a certain amount of cash on hand to defray any expense. You must also have a third elected officer in the same city to form the sub-executive committee as this is the place where the major part of the work is done during the interval between sessions. I

have done my best to further the ends of this society, and hope that my endeavor will be satisfactory to the members, and hope I have in some small measure helped the advancement and building up of our society.

Letters were mailed to all known architects and supply houses on the 1st of May, re general contractors, and selling goods outside the trade. Several replies have been received, and it will be the duty of this society to give them

32	names	reported	from	2	cities
1	"	"	"	1	"
82	"	"	"	3	"
33	"	"	"	6	"
60	"	"	"	23	"
78	"	"	"	25	"
222	"	"	"	1	"

special attention. The membership for this year will show an increase of at least 75 per cent. over last year. The Province of Ontario will show the largest increase in membership. This is on account of the good work done by their Provincial society. New Brunswick will show the next largest increase. This is also on account of them forming the Provincial body. Nova Scotia seems to be at a standstill. This also must be said of the Province of Quebec, who have fallen behind by 8 members. Alberta and Saskatchewan will show an increase. British Columbia will likely apply for membership and have a delegate present at this meeting. Manitoba requires special attention, also Nova Scotia. As for the Province of Quebec, I cannot say what can be done. This is a fair showing, and if this work is followed up closely for the next two years we will have a Provincial society in every Province.

There never was a time in the history of our society when the masters of our trade were so anxious for organization, and it only requires the earnest assistance of our members for a short time when we will reach the height of our ambition and build up on a good and solid foundation. It is bound to be a strength for all time to come.

Copies of resolutions asking for affiliation with this society have been passed at the Ontario, and New Brunswick Provincial meetings, and have been received and placed on file. The representatives from most societies will be present at this convention to further the aims and objects of this organization. Reduced rates have been secured on all the railroads.

All this correspondence will be found on file, and should be a guide for the incoming secretary. The secretaries of all the local and Provincial societies have done splendid work. I would ask that this convention give special attention to the correspondence from the following gentlemen:—P. Campbell, secretary, N.B. Provincial; W. J. Crawford, secretary, St. John local; J. O. Sawkins, secretary, Vancouver local; J. Cing-Mars, Ottawa; also the correspondence from the supply houses and architects.

I am sure our whole membership will regret to hear of the sad loss of life and property which has befallen the city of Regina, and that one of our mainstays in the person of H. J. Potts, Provincial



vice-president for Sask., has been one of the heavy losers.

Before retiring from office I wish to thank the officers and members for all their kindness and for the assistance they have given me, also the "Plumber and Steamfitter" journal, which at all times endeavored to make my task a light one.

All respectfully submitted,

John Watson,  
Secretary.

#### Report of Sub-executive Committee

This committee has held 25 meetings during the term, with president J. W. Walsh in the chair on every occasion.

The revising of the new constitution was taken up on the 4th November and continuously discussed at the meetings until it was got into its present form.

Each member of the executive and chairmen committees was mailed a copy, and it has also been published in the "Plumber and Steamfitter" Journal. We are somewhat surprised that there have not been more comments on this work.

The several standing committees have been given work to be done, as follows:

Heating and Ventilation Committee.—Requested to take into consideration a uniform specification.

Legislation Committee.—Requested to take up the matter of the invasion of the U.S. master Plumber into Canada, also to take legal advice on compelling supply houses to sell to the trade only.

Sanitary Committee.—To take up the question of standardizing ordinances and examination of master plumbers and journeymen.

Apprenticeship Committee, and Essay Committee, have been requested to report on those special subjects.

A copy of the several meetings of this committee will be found on file.

At the conclusion of the hearing of reports the roll call was next in order, and there was some confusion, owing to the fact that a distinct line had not been drawn between a list of those present and the list prepared by the Credential Committee, and it was found that the only list they had from which to call the roll was the Credential Committee list. After the roll call from the Credential List, it was found that there were some 12 or 15 present who were not members or delegates.

The next item of business was the appointment of committees. It was moved by Mr. Gordon and seconded by Mr. Mansell, that the president appoint these committees from the chair. President Walsh therefore named the committees which were decided upon the previous day. These were as follows.—

Press Committee.—Messrs. Gordon, Watts and McVeigh. The Audit Committee.—Messrs. Gardner, McKnight and Wye. Select Committee.—Messrs. Marr, Cameron, Grinyer, Yeomans, Clapper-ton. Resolution Committee.—Messrs. Mansell, Mahoney and Priestley.

#### Friday Afternoon Session.

At 1.30 the Alberta delegates met and were addressed by Lewis LeGrow, Toronto, and G. F. Frankland, on organization work. The Alberta delegates took

the opportunity of the Ontario officers being present in the city to discuss the matter of provincial organization in Alberta. Mr. LeGrow's suggestion was that the Alberta members organize and have a number of delegates in some central town in the province which could meet often, and be of service to the members throughout the province. This board could handle all problems of every member of the craft, and furnish all such members with information. Mr. LeGrow also stated that it meant a great deal to be incorporated with the Government, since the Government recognizes its authenticity, and would furnish information in better shape and more quickly than if the body was not incorporated.

It was moved by Mr. Priestley, and seconded by Mr. Lee, Edmonton, that a committee be appointed from Alberta to interview a prominent solicitor in Calgary regarding the possibility of incorporating in Alberta under similar rules and regulations as the organization in Ontario, using the by-laws of the Ontario society as a basis. This committee to report on Tuesday, July 23rd.

After the meeting of the Alberta delegates, the convention was called to order by Chairman Walsh, at 2 p.m. Friday afternoon.

Mr. McKnight, Edmonton, read the official report from the Province of Alberta, which was as follows:—

To the Canadian Society of Sanitary and Heating Engineers, in convention assembled.

Gentlemen:—

As your vice-president for the Province of Alberta, I beg to submit the following report on matters pertaining to this province.

While organization is the keynote of all our efforts, still, in a new country such as this, where the distances between the centres of population are so great, it is practically impossible for your vice-president to spend the time necessary to visit and organize all these different localities. For one thing, the expenses in connection would be very heavy, far exceeding any allowance made for same by the National Association, and the time lost would interfere very materially with the conducting of his own business. It is a great regret that such conditions exist as at the present time both the cities of Lethbridge and Medicine Hat are ripe for organization, but do not seem to be able to get together locally, and I think the necessity is for an outsider, who would be disinterested in a business way in his efforts towards the organizing of the masters in these cities.

In February of this year the first step toward provincial organization was taken in Alberta, and notices were sent out to all the sanitary and heating firms in the province, calling a general meeting in Calgary. I regret to report that only two replies were received from points outside of Calgary, Edmonton and Lethbridge, these two expressing willingness to become members of the association, but regretting being unable to attend the meeting personally. However, the Calgary, Edmonton and Leth-

bridge delegates decided to go ahead with the provincial organization, figuring that if such an organization were formed, even by themselves alone, it would tend to raise greater interest throughout the province in general, and eventually bring the craft all into line, resulting in a first class organization. This was done, and the provincial association is now in existence under the name of the Alberta Association of Domestic Sanitary and Heating Engineers, with T. F. McKnight, president; R. J. Priestley, vice-president; and L. M. Phelps, secretary, as well as other officers who were elected to act provisionally until the province was thoroughly organized. Before adjournment, it was decided to call another meeting of the whole province, this meeting to be held during the course of the National Convention, in Calgary, and notices were sent out to this effect. We hope to have a larger and more general attendance at that time, and the results of this meeting I will have the honor of communicating to the National Association before the conclusion of the convention.

Referring back to my first remarks re distance and heavy expenses, loss of time, etc., one of the first steps that will be taken up by the provincial association will be the appointing (if possible) of a provincial organizer, a man who can devote both time and energy to the organization of local centres and general provincial organization. We think this is the solution, to a great extent, of all the problems that beset the path of the association in their efforts towards organization.

One of the points that we have to consider in Alberta is the number of new towns which are springing up and the number of new firms in these towns and in the older centres. This expansion makes it practically impossible for us to keep perfect track at all times of every firm in the province, but we trust that this national convention, held as it is in the heart of our province, will awaken these new men to the value of organization, and the results will be that we will secure the co-operation of many new arrivals, men with up-to-date ideas, and these will infuse new life and enthusiasm into the older firms.

Business in general throughout the province has been in a flourishing condition during the past year, but owing to the seeming importance of securing material from the Eastern manufacturers (especially soil pipe), the members of the trade here are handicapped in their efforts, and a lot of really unnecessary expense is thrown on their shoulders to meet with the demands of a great and increasing population. If some system of a more equitable distribution of material were put in force by the Eastern manufacturers, proportionate to the demand, many of the difficulties that beset the path of the sanitary engineer would be smoothed away, and life would assume a rosier tint, and more time could be devoted to the proper organization of the craft.

Respectfully submitted,  
Alberta Provincial Vice-President.



### B. C. Men Affiliate.

A request was read by Assistant Secretary from the B. C. Society to join the Canadian Society. The request stated that there were 18 members in B. C., and that the work was progressing well, and that there was a good future in the province.

It was moved by E. K. Strachan, and seconded by Mr. Millar, that the affiliation take place at once. Mr. Wye, who was the representative from Vancouver, stated that the best men in the business in Vancouver City were members of the

society, and that the Canadian Society would be greatly benefited by the assistance that the members from the Coast could give them, and in return the B. C. Society would be greatly benefited by the help from the Canadian Society.

President Walsh formally welcomed the B. C. Society, and asked Mr. Wye to convey the best wishes of the Canadian Society members to the members at the Coast.

The meeting then adjourned in order that the members might go to the Empress to hear the address of Prof. Kidner on Technical Education.

J. A. Gordon.

A. W. Gardner.

It was moved by Mr. Strachan, seconded by Mr. Gother, Wetaskiwin, that the report of resolution committee be taken clause by clause.

The matter of paying the expenses of the sanitary inspectors was referred to, and Ald. Yeomans replied that it was not the thought of the committee to pay any expenses, but the municipality from which the inspector came would be glad to cover all expenses if the inspector was given the privilege of attending.

Before the discussion was continued, Messrs. Adam (Regina), and S. R. Patterson, Cranbrook, B.C., were introduced to the convention and received applause.

The resolution committee then reported on vice-president's address as follows:

Vice-president's report:

Clause 1.—We recommend that the clause re provincial organizers be discussed fully.

Wm. Mansell,

Chairman.

J. A. Gordon.

A. W. Gardner.

A report was then read from the London-Ontario Society as follows:

To the National Society of Sanitary and Heating Engineers of Canada—Greeting:

The London society send their best wishes for an enjoyable and profitable convention to their fellow craftsmen.

Kindly apply the smoke test to the accompanying box of Rex cigars "made in London."

Yours Fraternally,

A. E. Gibbons, Pres.

J. R. Haslett, Treas.

E. H. Russell, Sec.

The report was presented by Mr. Eggett, and received enthusiastic applause, as the cigars were passed around.

Report of select committee:

Your committee beg to report that they have carefully examined the correspondence sent out and received by the secretary, and submit to the convention the following matters which require action at this convention.

1st.—Letters have been received by members of our association intimating that certain sanitary inspectors would be pleased to attend our annual convention if an invitation were extended to them. We recommend that in future one or more of the sanitary inspectors of our towns and cities be invited to attend our convention as visitors.

2nd.—Regarding the letters received from architects in response to communications asking that specifications for plumbing and heating be written separately, and separate tenders be required. We are pleased to report that the majority of replies are favorable. Your committee would urge that the

## Reports of Committees Submitted

**Important Steps Are Decided Upon—Improved Conditions are Aimed at in Reports Prepared by the Various Committees—Move Started to Ban the General Contractor and to Check Foreign Competition.**

Saturday morning the majority of the delegates went to Banff and Loggan for the day. A few remained until Monday returning arrived in Calgary about 4.30 p.m.

The magnificence of the mountain scenery completely captivated all those who had not seen the Rockies before, and the excursion to Banff was one of the experiences that will be most lasting to the memory.

### Monday Morning.

The delegates were very dilatory in assembling at the opening of the Monday morning session.

President Walsh called for the report of the resolution committee which dealt with the various reports submitted the previous Friday.

Report of resolution committee on president's address: "Your committee on resolutions hand to the convention assembled their recommendations as follows:

On this report your committee beg to highly commend the work done by the president and his indefatigable attention throughout the year to our interest.

Clause 1.—In regard to his report re general contractors—this condition exists in many of our constructions and it is very injurious to our interests, bringing in unfair competition from the South. To confront this evil concerted action is necessary. Your committee recommend that the incoming executive get into correspondence with different builders exchanges throughout Canada and bring pressure to bear on our respective cities and governments to pass laws taxing alien contractors equal to our business taxes. We find in our larger cities many architects in favor of separating our work from the general contractor, and we should as far as possible refrain from giving bids to general

contractors. This is the practice in Montreal and Toronto.

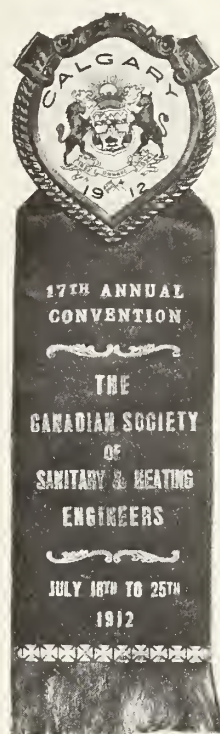
Clause 2.—On relationship with supply houses we advise that this clause be adopted, and that a general committee be appointed to confer with the manufacturers and supply representatives at the convention and to mutually agree in fair relationship beneficial to all concerned.

Clause 3.—We recommend that clause in respect to appointment of officers be adopted.

Clause 4.—We recommend National assembly pass a motion of condolence to the family of our late confrere, J. W. Hughes, Montreal.

Wm. Mansell,

Chairman.



Convention Badge.



local associations arrange for a meeting with the architects of their locality, and discuss this question with them.

3rd.—By far the greater part of the correspondence were letters from our secretary to associations in various parts of Canada. Letters asking for information and others acknowledging receipt of same. Letters of advice, of scolding, of encouragement. Your committee feel that they cannot allow this opportunity to pass without commenting upon the enormous amount of clerical work accomplished by our secretary, and the faithful manner the duties of the office have been performed.

G. Clapperton.  
Alex. Cameron.  
G. Ginger.  
R. M. Yeomans.  
J. Marr.

Report of special committee dealing with report of heating and ventilating committee.

Chairman and Gentlemen:—

We, the heating and ventilating committee, beg to report that we have examined the hot water and steam heating specifications drawn up by your standing committee.

The same is satisfactory to this committee, after making a few slight alterations indicated on same. We further suggest that the separate amount of square feet of radiation for each room be eliminated, but the total radiation be given.

We also endorse the form of contract and estimate sheet as submitted. Also that a special committee be appointed at this convention to take up the question of technical education as dealt with in the reports of the apprenticeship, sanitation, heating and ventilating committees.

Samuel A. Wye.  
G. Clapperton.  
R. J. Priestly.  
A. C. Waltz, Sec.

Mr. Yeomans was asked to read the by-laws.

Mr. Mansell opened a discussion relating to the appointment of a committee to petition the Dominion Government for a national charter. It was moved by Mr. Mansell that the incoming executive endeavor to secure a Dominion Charter during the coming year, seconded by J. A. Gordon. Carried.



#### Convention Notes.

Harry Mahoney, Guelph, was talking real estate to a local dealer down town Friday night, and became very much interested in the proposition laid before him. He did not buy, but that night he dreamed that he had bought and made a profit on his deal of \$104,000. In the morning he began to sweat blood when he discovered it was "only a dream."



During the trip to Banff, Mr. Walsh (Pres.), jokingly asked Mr. Alex. Macdonald, Montreal, to act as his valet throughout the excursion. On the return trip it was noticed that Mr. Macdonald was missing from the party. A scout was sent out to find him, as it was known that he was somewhere on the train. He was found after considerable search asleep in the baggage car. When aroused he seemed to be annoyed and said angrily, "let me alone I am looking after Jimmie Walsh."



Alex. Macdonald, Montreal, originated the following song which was sung all along the line from Montreal to Calgary, and at every stop the delegates would gather on the platform and shout it. It has been sung about six times a day:

"There was an old hen  
She had a wooden leg  
The finest old hen that ever laid an egg,  
She laid more eggs than any chicken on a farm,  
And another little drink won't do us any harm."



The following delegates came up from the east to Calgary together, leaving Port McNichol on the steamer Assiniboina, and landing in Port Arthur, Alex. Macdonald, J. E. Walsh, Ald. Yeomans, Mr. and Mrs. Gordon and Miss Gordon, Mr. and Mrs. Watson, H. Mahoney, A. Malcom, Geo. E. B. Grinyer, F. Smith, A. W. Gardner, Geo. Clapperton, G. F. Frankland, L. LeGrow, A. C. Waltz, J. A. Miller, J. Eggett, J. A. Caslake. Mr. Baylis joined the party at Moose Jaw. The whole time was enlivened by songs, particularly the favorite, "There was an old hen." John Watson said we had "some time."

## Standardization of Ordinances Urged

Important Question Taken up at Tuesday's Session of the Convention—Amendments to National By-laws Discussed—A Dominion Directory Will be Compiled.

The Tuesday morning session opened with a good attendance of delegates, and important business was at once proceeded with.

Report of resolution committee on sanitation committee report.

"We highly recommend the work of this committee, and recommend that the work on hand be handed over to a special committee in conjunction with the legislative committee to formulate a memorial to the Dominion Government, through the conservation commission applying for a standard sanitary ordinance throughout the whole Dominion.

"We would recommend that where possible the members of our societies should have representation on their respective local health boards. We also recommend the committee on having such eminent men as T. B. Kidner, Calgary, and Dr. Hodgetts, of the conservation commission to address the convention."

Respectfully submitted, Wm. Mansell, Chairman, A. W. Gordon, H. Mahoney.

Your committee strongly recommend the adoption by the Canadian society of sanitary and heating engineers, what is known as the Baltimore system, namely, that the incoming executive compile a list of all the known manufacturing and supply houses and send same to all members of this society, this list to be revised from time to time at least monthly, and that all provincial society be asked to give the National society the necessary assistance financially to do this in a thorough manner.

Alex. Cameron, E. K. Strachan and Louis LeGrow.

#### Amendment to By-laws.

It was moved by R. W. Yeomans, Toronto, seconded by S. A. Wye, Vancouver, amendment to follow immediately after clause 15 of the revised by-laws and to be known as clause 15 a.a.

"That where practicable special committees shall be appointed by the executive committee with sufficient time to enable them to perform the business assigned them and to report fully at opening day annual convention."

This is a very important amendment and aimed at saving the time of the convention. It was noticeable that much time was lost owing to the inconvenience as suggested by the amendment.

#### A Dominion Directory.

Report of resolution committee on secretary's report—"We recommend that the compiling of a Dominion Directory be continued by the incoming executive."

#### Discussion on By-laws.

The secretary called the attention of the meeting to the by-laws and constitution which he had in his possession and which he contended were not sufficiently dealt with. Mr. LeGrow supported Mr. Watson's suggestion, stating that seven men were out of the convention on committee work.

Moved by Mr. Cameron, seconded by Mr. Mansell, that we revert back to work of discussing the constitution and by-laws.—Carried.





A group photograph of the Convention taken for Plumber and Steamfitter.

## Officers for Ensuing Year Elected

**E. J. Young of Calgary, Elevated to the Presidency — Harry Mahoney Becomes Vice-President—Montreal Selected as Next Place of Meeting—Votes of Thanks Passed.**

In the absence of President Walsh, the meeting called Louis LeGrow, Toronto, to the chair.

The chairman called for the appointment of a nominating committee. They were appointed by the chairman as follows:—Messrs. Gordon, Montreal; Mansell, Toronto; Marr, Calgary; Anderson, Vancouver; Waltz, Twin Cities.

Expense accounts read moved that cheques be issued.

A letter was read from the Ontario society asking to affiliate with the national society. The adoption was moved by Mr. Bayliss, Moose Jaw, seconded by Mr. Caslake, Collingwood.

Members stood up in carrying the vote.

Moved by Mr. Caslake, seconded by Mr. Elford that admission of New Brunswick society be received and charter be forwarded as soon as national society get it.

Moved by the meeting that \$25 which came from New Brunswick be returned as we have no power to receive it.

Mr. Roy, Banff, Alta., was introduced to convention.

### To Join Ontario.

Moved by Mr. Watson, seconded by Mr. Cameron, that local and provincial societies affiliate with the Ontario so-

ciety which has a charter. This will include New Brunswick.

### The Per Capita Tax.

Moved by Mr. LeGrow that one dollar be the fee from members who apply through the provincial societies, and three dollars from members who apply direct for membership in the national society. It was brought out in the discussion that this amount would not be sufficient.

Mr. LeGrow spoke strongly on the question. The provincial society must do the most in the work of making members. The national society cannot do it and a small nominal fee is the best policy, he said, further he stated that what we want is facts as to what sum is necessary.

President Walsh being relieved from the chair stated that he favored a movement to strengthen the national society and have the per capita tax struck by sub-committee of national society.

What was done with the heating and ventilating committee's report of last year? The form of contract as outlined by this committee was read to the convention, the specifications being omitted.

### These Were Passed.

It was passed upon motion of Mr. Waltz "That in this and every future

convention supply men present in the city be invited to attend the convention of a half day.

Report from Resolution Committee re provincial vice-presidents:—

### Nova Scotia.

We recommend that the incoming executive committee use their endeavor to assist F. Dexter and the good members of the Halifax society to put their shoulders to the wheel in a thorough organization in the Province of Nova Scotia as they already hold a charter granted by their Provincial Government organized under same. We think that this can be done satisfactorily by thorough correspondence.

### Alberta.

We highly commend the work of the provincial vice-president of Alberta in practically fulfilling his duties during the year by organizing a provincial society in his territory and hope in the near future they may be able to organize local societies in Lethbridge, Medicine Hat and other larger centres thereby having the material at hand to secure a provincial charter from the local government.

### Ontario.

We highly commend the work done by the vice-president of Ontario in forming the provincial society in such a thorough manner and recommend his



high ideals of the way of carrying on the work of the province.

#### British Columbia.

In connection with this report we are glad to hear that the good work has been started in this province by the formation of a local society and would recommend that the next executive assist the vice-president elect in this province to extend their organization by consistent correspondence this mode having been very successful in other provinces.

Quebec, Manitoba, Saskatchewan, we regret to report that vice-presidents of these provinces have sent in no report whatever and hope the newly appointed officials will have a more satisfactory state of affairs at the next convention.

Wm. Mansell.

A. W. Gordon.

Harry Mahoney.

#### Next Convention.

Moved by Mr. Mansell and seconded by Mr. C. Wright, that the next convention be held in Montreal.—Carried.

The report of Nominating Committee recommended new officers as follows:—

President.—E. J. Young, Calgary.

Vice-Pres.—H. Mahoney, Guelph.

Secretary-Treas.—J. Marr, Calgary.

Provincial Vice-Presidents:—F. Dexter. Mr Dexter had written that he would not take office.

Nova Scotia.—J. Farquhar, Halifax (elected).

New Brunswick.—Geo. Blake.

Quebec.—A. W. Gardner.

Ontario.—A. C. Waltz, Port Arthur.

Manitoba.—J. Hammond, Winnipeg.

Saskatchewan.—H. Potts, Regina.

Alberta.—J. Priestly, Calgary.

British Columbia.—S. A. Wye, Vancouver.

Prince Edward Island.—Webber.

#### Chairmen of Committees.

Sanitary Committee.—Geo. Clapperton, Toronto.

Heating and Ventilating Committee.—J. Watson, Montreal.

Legislative Committee. — Louis Le Grow, Toronto.

Apprenticeship.—J. Marshall, Port Arthur.

Essay.—W. Mansell, Toronto.

E. J. Young, new president, was escorted to the chair by Mr. Anderson and Mr. Eggett.

Vote of thanks to retiring officers. Hearty applause.

Mr. Mar was escorted to secretary's chair and received a hearty handshake from retiring secretary Watson.

Moved by Mr. Waltz, seconded by Mr. Watson, that the president and secretary be authorized to invite the supply men to be present at the general meeting of the convention this afternoon.

Mr. LeGrow moved a vote of thanks to the Calgary members for the thor-

ough way in which the delegates were entertained. He spoke of the educative features of the exhibits which surpassed any exhibitions of the kind ever seen by the visiting delegates. The vote was seconded and the song struck up, "They are Jolly Good Fellows."

Vote of thanks to Plumber and Steamfitter was moved by Mr. Anderson, seconded by Mr. Waltz, and L. P. Hark-

ness the representative, was asked by the chair to reply.

Moved by Mr. Mansell, seconded by Mr. Anderson, that sum of \$200 be remitted to Secretary Watson. In speaking to motion Mr. LeGrow said that he was secretary for one year and knew the burdens of the office and asked that \$200 be remitted.

## Manufacturers Meet With Delegates

Opinions Expressed at Joint Meeting Held Toward Close of Convention—Amity Shown Between the Two Bodies—The Interests of Both are Declared to be Identical—Advance in Craft Commented on.

At 3 p.m. on Wednesday, July 24, a meeting of the manufacturers and jobbers was held in conjunction with the delegates. E. J. Young was in the chair. A number of topics were introduced, and among the speakers were the following:

A. C. Waltz, Port Arthur.—"The plumber used to get about thirty cents per hour, and was called a robber when he tried to exact a living wage. Thus the name plumber fell into disrepute. Now the sanitary and heating engineer carries a live stock and is a benefactor to the community by preserving health in homes, schools and public buildings. We have met with opposition from the public, but we are winning our way, we want to be good friends with manufacturers, jobbers and the public."

Mr. Fulton, Winnipeg, congratulated the delegates on the splendid convention and expressed the feeling of the other manufacturers in a desire to feel kindly disposed to the society and a wish to co-operate with them.

Mr. Anderson, Vancouver—"We desire to raise the standard of the pro-

fession, and although there have been difficulties, they have all dissolved when handled in a businesslike way."

Mr. Brock, Winnipeg—"From the manufacturers standpoint we are with you through thick and thin. You need not look up to us, for we look to you since 'we need the money.'"

Mr. Roden, Montreal—"The craftsmen give the prevention against disease and no cure is necessary for physical ills. The business of the profession is a high one, and you are going along the right lines in trying to introduce technical education."

Mr. Whitlan, Toronto—"American societies are not superior in any way to Canadian societies. The workmanship in Canada is also high and developing rapidly."

Past President Walsh, Montreal—"The convention appointed a committee to deal with manufacturers to secure co-operation and protection from all possible illegitimate ways and means."

Secretary Treasurer Marr, Calgary—"Manufacturers sell to men who are not in the trade, and thus handicap the



The "Big Four" from Guelph—Fred Smith, Harry Mahoney, Geo. E. B. Grinyer, and Andy Malcolm. They represent the four firms in the Royal City. Guelph did herself proud in the matter of representation.



intelligent engineer. We have served years and want protection. We alone are competent to put in a system right."

J. H. Kinsally, St. Louis, President American Society of Sanitary and Heating Engineers—"We are all indebted to the manufacturers for what

we learn from them and what we are continually learning, as they promote new ideas and introduce new systems."

## A Big Manufacturers' Exhibition

Many Firms Were Represented and the Display of Goods Was Varied and Comprehensive—A Brief Description of the Booths.

The manufacturers exhibition in connection with the convention was of good size, and it undoubtedly added to the interest of the event. A brief description of the various exhibits follows:

The Canada West Natural Gas, Light, Heat and Power Co., Limited, had an exhibit of stoves and heating and cooking accessories, also gas lamps. The booth was long and narrow and showed all the goods to advantage, it was also permanently built of metal. The display created interest chiefly on the part of Calgary citizens, owing to the new gas feature of the city.

Walden Co., Winnipeg, had one of the best booths, in which three furnaces were on display. The booth was built of plaster, and though small, had the appearance of a house. A large Spencer heater was in the centre of the room. B. A. Baleh was in charge.

Johnston Temperature and Regulator systems were well displayed on counters of colored bunting and in the walls. The accessories on the wall were perfectly set for demonstration purposes. There were also valves and steamfitting supplies. Mr. Clarke was in charge.

Atlas Brass Manufacturing Co., Ltd., Cleveland. A pretty booth, about 12 ft. x 12 ft., decorated with yellow and blue bunting, on which taps, stop cocks of all sizes and styles were arranged in systematic order. Every article could be well seen. The delegates kept Mr. Fisher and Mr. Franckel busy throughout the convention.

Darling Bros., Winnipeg. The Webster system of heating was displayed and demonstrated well. Dials, valves and steam traps of all sizes were shown. An electric driven pump and receiver was on exhibition also, and sold for a Calgary school.

The Canadian Wolverine Co., Chat-ham, displayed lines of brass and rubber goods, traps, overflows and bathroom accessories. The name "Wolverine" was made by pipe joints on the back wall of black velvet. It was a good display. C. H. Bakemeyer was in charge.

H. Mueller Mfg. Co., Sarnia, Ontario, with W. Heinrichs in charge, this was one of the most popular exhibits in the hall. The salesman talked brass goods, tools, water and gas capping machines to

everybody. The display was well arranged, a black velvet covered stand carried the smaller accessories, and a glass case was prominent containing bathroom accessory supplies.

Philip Carey had a small booth of asbestos and magnetic lines. All the attractiveness lay in the goods themselves.

Six Bowser Pumps were displayed by W. V. Denning, Calgary. The six pumps comprised all the sizes and styles. The booth was large and easily accessible to those who wished to test them.

The Honeywell Heating Specialty Co., Wabash, Ill., had a good display of specialties in charge of Mr. Rawley.

Macdonald & Sons, Limited, Toronto, had a display of pipe, pipe wrenches and threaders. A. L. Macdonald was always on the job demonstrating. This booth attracted considerable attention.

Plumbers Supplies, Ltd., Winnipeg, had a fine exhibit of rubber goods and specialties, the letters P. S. being arranged on the background with washers.

J. L. Mott & Co., Montreal, had a small, but beautiful display of white enamelware urinals, closets, and bowls. The booth was finished in washable wall paper, suitable for a well appointed bathroom.

Western Foundry & Metal Co., Ltd., Calgary, displayed Standard Ideal Ware. There were 13 bowls, 2 baths, 3 closets and 2 sinks, all well appointed in the spacious showroom immediately inside the front entrance of the convention hall.

They also had large cast steam pipe joints in another part of the hall.

Twyfords Ltd., Montreal. This was the largest display in the hall, and Mr. Saywell is to be given great credit for the interest and attractiveness that was evidenced. Over forty-two pieces of equipment were set up for demonstration purposes. Besides the eight house closets there were two railway coach closet equipments. These were in charge of Mr. Saywell, Canadian manager, Mr. Hartridge, Calgary, Mr. Taffiner, Montreal.

Metals Ltd., Calgary, displayed standard sanitary wares, and the exhibition was very attractive in appearance. There were eighteen installation fixtures besides about twelve mirrors which added greatly to the appearance. The space was 30 ft. x 25 ft., and was advantageously located in the hall. Mr. Thompson and Mr. Berryman were in attendance.



A group of delegates in the car of the new President, E. J. Young, of Calgary.



## Delegates Gather Around Banquet Board

An Enjoyable Event on Wednesday Night — President Young Presides and Many Toasts are Honored—Informality was the Order and the Company Sang at All Stages—Speeches, Song and Story Made up an Enjoyable Evening.

CALGARY, July 25.—Crown's Cafe never contained a more spirited crowd than when hosts and guests met at the banquet on Wednesday night. President Young was in the chair, and made himself popular by not being too strict in his order rulings. The dinner comprised eight courses and it was past the hour of ten o'clock when the first toast was proposed.

Throughout the dinner and the toast list as well, the crowd kept up the incessant "Old Mr. ——— is a good old soul," and almost every one whose name was known received this recognition. At any rate every speaker was sung about, applauded and jolly good fellowed, to such an extent that the toast programme was lengthened considerably.

However, everybody was happy and the merry hours flew by, the last song being sung about 1.15 a.m. The glad

hand was then passed around in parting.

The toast to "Our Country" was responded to by Major Roden, Montreal.

"Our Guests, The National Association," was responded to by Louis LeGrow, and A. Waltz.

"The Mayor and Corporation," responded to by Mayor Mitchell, Calgary, and Mr. Richards, Calgary Builders' Exchange.

"The Manufacturers and Supply Trade," responded to by Mr. Mueller, Sarnia; Mr. Fulton, Winnipeg, and Mr. Fisher, Cleveland.

"The Architects and Engineers," responded to by Geo. Laing, Calgary, Mr. Kinneally, St. Louis, U.S.A.

"The Press," responded to by the representative of Plumber and Steamfitter.

"The Ladies," responded to by Mr. Heinrichs, Muller Mfg. Co., Sarnia.

aim is the conservation of heat. It shows that the many experiments made before the system was perfected were based upon the simple knowledge that a little water in a kettle will heat more quickly than will a kettle full. This led to the belief that less water, circulated more quickly, would give more efficient heating service. Smaller piping made the lesser supply of water possible, and mercury pressure properly regulated gave the quicker circulation. So the booklet explains.

Another attractive pamphlet deals with the Honeywell temperature regulator, an ingenious device—something in the nature of a combined clock and motor—which guarantees an even temperature in house or office. This device works the drafts so that the heat is steadily kept at the right temperature. The clock can be so set that heat will be turned on when needed. By it, for instance, one may sleep in a cold room without being forced to get up in the cold. The regulator will get up an hour or so ahead of the sleeper, and so work the regulators that things will be warmed up for him.

The other booklet—it is really a textbook—deals with the proper methods of installation. Heating engineers will be interested in it.

## All Plumbers Must Be Licensed

Toronto, Ont.—The special civic committee drafting a plumbing by-law has decided that all plumbing work must be done by a licensed master plumber, or by a regularly educated, practical and experienced plumber in the employ of such master plumber, and any faulty work must be rectified to the satisfaction of the medical health department. The plumbing inspectors must have passed an examination qualifying them for their work. A maximum fine of \$50, and in default six months' imprisonment is the penalty fixed for violation of the provisions of the by-law.

"The city can't prevent a man from doing plumbing in his own house," said City Solicitor Johnston this morning, discussing the new plumbing by-law which provides that all work required under the measure must be done by a licensed plumber.

Dr. Hastings, the medical health officer, stated how the clause would be interpreted. It would not prevent a householder putting on a tap or making a hot water connection.

"He will not be interfered with," said he, "so long as he does not interfere with the sanitary arrangements. We cannot allow the work to be done by everybody. Some protection from incompetent workmen must be provided."

Other features of the new city plumbing by-law are as follows:—

In case a building be erected on a street which is not sewered, septic tanks may be installed upon receiving a special permit from the M.H.O.

Between the house and public drain there shall be placed a ventilation and hole cleaning trap of approved description.

Plans for the construction and alteration of drainage or water systems connected with any house must be filed with the M.H.O. and approved before a permit for the work is granted.

The smoke test shall in all cases be applied to finished plumbing work by a master plumber before it is handed over to the owner.

All drains used for sewage or waste water under any building shall be of cast iron.

### Honeywell Booklets.

The Honeywell Heating Specialty Co., Wabash, Indiana, has just issued three exceedingly attractive booklets telling of their heating system. The booklets are attractively gotten up, and they are attractive for what is inside them. They will be valuable to many dealers, not only for the better insight into the system which they give, but for distribution among prospective customers.

One booklet explains the principle of this system. It shows that the whole

If the job to which you allude has a large number of fittings to be covered, we believe that it would be cheaper to buy the fitting covering that was already molded. However, if there are only four or five fittings to be covered you can cover them with the paste and then paste on some canvas. Dot the fittings all over with little gobs of asbestos allowing same to dry thoroughly before putting on the second (thin) coat. When the second coat has dried the final coat can be put on to the desired thickness. In this way the asbestos will stick. If you attempt to put it on in one coat it will swell and drop off, as perhaps you may have noticed.—D.C.H.

### Notes.

Chas. Bakemeyer, Alderman Ramsey, Roy Lee, all of Calgary, entertained many of the delegates at the Alberta Club. The delegates appreciated the privilege of the club, and wish to thank those gentlemen who so kindly offered the club to them.

# Plumber and Steamfitter

## and Metal Worker of Canada

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Boards of Health, Architects, etc.

TORONTO, AUGUST 1, 1912

THE CONVENTION at Calgary was a success from every standpoint. The attendance was large and representative. Matters of vital importance were dealt with and the coming year will see the inauguration of work

**A RED LETTER CONVENTION.** heating trades on a higher plane. It should be a memorable year in the history of trade organization.

Time does not permit of extended comment on the results of the convention deliberations. Many of the questions discussed are of such importance, however, that they will be dealt with in the next issue.

We desire to congratulate the retiring officers on their splendid work during the past year, and the Calgary association on their success in arranging and carrying through the convention.

FROM TIME to time there is unfavorable comment upon the charges made by Sanitary and Heating Engineers. But some things cost more than plumbing work, and one of these is undoubtedly plumbing experimenting.

Joseph Gilman, of St. Louis, Mo., will agree **INEVITABLE** with this, if he lives to agree with any **RESULT.** thing.

Mr. Gilman must be of an economic turn. Anyway, he—an unskilled man—attempted to make a difficult gas connection in his own home. The result was what any Sanitary Engineer would have predicted—an explosion. The accident caused severe injuries to Mr. Gilman, and it is not yet known if he will recover.

A few dollars—or perhaps less—spent to secure the services of a trained man, would have prevented that accident. A Master Plumber would have known how to proceed, and what precautions to take. Mr. Gilman evidently knew neither.

THE SCARCITY in metals is becoming more pronounced all the time. Shortages are developing all along the line, and although no crisis has yet been reached, it is apparent that the situation is not reassuring.

**SCARCITY OF METALS** Getting down to the root of the matter, it is apparent that the consumption, in this country, and in all others as well, has largely increased. Although varying conditions and manipulation are accepted as reasons for some shortages, the growth of consumption is the cause underlying all.

In many lines, consumption is no longer traveling in double harness with production. It is forging ahead. Under the circumstances, predictions are freely and confidently made that prices will go higher. This, of course, would have the inevitable effect on the prices of goods into the manufacture of which metals enter.

A PARTY of English manufacturers have been touring through Canada for the purpose of “sizing up” the possibilities of this market for British-made goods. The itinerary of the party took them from coast to coast, and gave them an opportunity of visiting all the more important centres. The object of this cross-continent jaunt is one in which all Canadians will heartily concur.

**SPYING OUT THE LAND** Canadians have quite rightly felt that the British have not held a true conception of the importance of this country hitherto. While the old-time impression in John Bull’s mind that “Our Lady of the Snows” was an icebound land of little commercial value and somewhat of a white elephant in other respects, has long since been dissipated; while it has gradually been brought home to the British people that Canada is still a country of wonderful possibilities; the conception still held is inadequate and far from comprehensive. The truth of the matter is that one has to see Canada to appreciate the country. There are (who knows?) thousands of Canadians who have almost as befogged a conception of their own land as that held by people beyond the seas, never having strayed beyond their own section or county.

That good will result from the tour is certain. British manufacturers, with some bright exceptions, have been either timid or indifferent to the Canadian market in the past. They have not taken the active steps to cultivate the close acquaintance industrially which may be expected to result from the personal observations of the members of the party. That the manufacturers will carry home the belief that the Canadian field is worth aggressive exploitation is a safe assumption, and the industrial connection between Great Britain and this country in future seems equally assured.

THE AGREEMENT entered into with the Bricklayers and Stone Masons of Montreal, means much to the Sanitary and Heating Engineers. Operations on new buildings will now proceed smoothly and nothing will render plumbing work unnecessary.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## ACID PROOFING PIPE.

Editor Plumber and Steamfitter. — Is there any way in which water pipes can be fixed so that they will resist the attacks from various fumes of such acids as nitric and sulphuric acids?

A. B. Bishop.

We have been told by a party who made the experiment that if the pipes were painted with a coat of the pure asphaltum paint that such coated pipes will last for years.—D.C.H.

## NO NEED FOR LOOP ON JOB.

Editor Plumber and Steamfitter. — I have ten radiators to heat on same

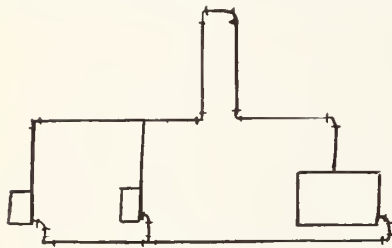


Fig. 1

level with steam boiler on steam job. If I install as I show (Fig. 1) do you suppose they will heat?

D. C. Jones.

A far easier way would be to connect to the boiler below water line, as shown in Fig. 2, your radiators would then be heated by hot water and would be hot when the steam radiators were cold, many times. At "X," shown by arrow, we should use a divided fitting to insure



Fig. 2

an equal circulation to both radiators.—D.C.H.

## WHY IS EXPANSION TANK NECESSARY?

Editor Plumber and Steamfitter. — Just why is it necessary that an expansion tank be used on a hot water heating job?

J. C. Hawkins.

When water is heated, it expands. If you heat water to the boiling point it has expanded nearly one twenty-fourth of its volume. Now if you were to confine this water into just the space it could occupy when cold, then something would break when it began to look for more room so to speak. So the expansion tank is put on to give a place for the one 24th extra room needed when the water is hot. In reckoning the room needed, the expansion tank's size should be at least 1-20 of the sum total of the space in the boiler, radiators and pipes of the job. If this rule is followed there will never be trouble with the tanks overflowing from being too small. The ordinary hot water heating contractor generally guesses at the size of the expansion tank and hence, many times, has trouble from his lack of foresight.—D.C.H.

## WHERE HEAT IS WASTED ON PLUMBING JOBS?

Editor Plumber and Steamfitter. — Is it customary to cover the pipes connecting the coil in a furnace or boiler and the range boiler?

S. K. Smith.

According to our observation it is not customary. We see no reason why such pipes should not be covered and thus save a portion of the heat that is thrown uselessly into the cellar. If the coil gives more heat than is desired, it can be so installed that it does not take so much heat from the boiler or furnace, for take a certain percentage of heat from the fire it certainly does. Simply because such pipes are not generally carried does not make it practically right that they should not so be and we believe that here is a chance for an improvement in the way in which the work is generally done by the trade. —D.C.H.

## DIFFERENCE IN GAS LIGHTS.

Editor Plumber and Steamfitter. — How much gas will a mantle burner save as compared with the ordinary open flame burner?

"Gas Jet."

We have not the exact figures at hand but we should say on a rough guess at

least 50 per cent. Besides which you get from five to six times the amount of light.—D.C.H.

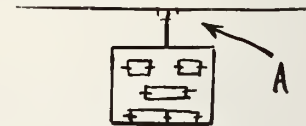


Fig. 3 -

## LEAKY JOB ON BOILER.

Editor Plumber and Steamfitter. — At point A, Fig. 3, the main leaks badly. Caulking will not stop it. How can I get a tight job?

John Simonds.

As shown by sketch you seem to have started out of opposite sides of tee on top of boiler. This, from expansion, strains the fitting and there will always be more or less leaks. Change as shown in Fig. 4 which gives plenty of room for the expansion on such small jobs as would go into the ordinary house. We

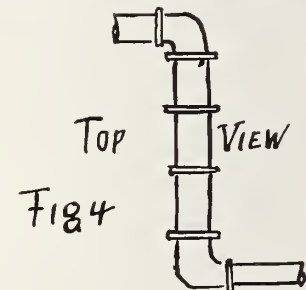


Fig. 4

think you will then not be bothered by leaks at this point.—D.C.H.

## WHICH IS BETTER, WATER FRONT OR WATER BACK?

Editor Plumber and Steamfitter. — I see the terms water back and water front used frequently in your paper. Which is more practical?

P. S. C.

It depends upon that for which the heater is to be used. Some plumbers say that a waterback spoils the baking of the oven. Others claim that a waterfront does not heat the range boiler properly. If a very hot fire is to be kept in the stove, we believe that a water front would work all right. It is a question where the mechanic will have to judge circumstances for himself.—D.C.H.



# Sectional Steam Heating in Chicago

A Paper by S. Morgan Bushnell Read Before the National District, Heating Association at Detroit, Mich., June 27, 1912.

With the growth of the central station lighting and power business in Chicago, and the consequent development of great power stations, there came about a gradual increase in the size of the buildings served by the lighting company. As these larger buildings, one by one, began to use central station service for light and power, there was a demand for a company which would complete the cycle by providing for the heating of buildings, thus enabling owners to buy the three forms of energy required in the operation of a building, namely, heat, light and mechanical power. To supply this need a company was organized in Chicago in 1900, called the Illinois Maintenance Company.

## **Operates Boiler Plants Already Installed In Buildings.**

This company has operated on a scheme somewhat diverse from that followed by the majority of steam heating companies. It has installed no plants of its own and, with one or two exceptions, has installed no boilers. It simply contracts to operate boiler plants already installed in buildings, so as to furnish steam for heating and other purposes. This scheme at first sight might seem like a radical departure from the ideas thus far entertained by the steam heating companies. It might be thought that the central station idea was being lost sight of and that a policy of decentralization, rather than centralization, was being adopted. To a certain extent this is true, but it must be borne in mind that the conditions to be met in the central parts of larger cities are radically different from those in smaller towns.

## **Difference in Efficiency Between Power and House Heating Boilers.**

The heating company in the smaller town which conducts a house to house business has much in its favor. In the first place, there is a marked difference in economy between the small heating boilers and the large heating boilers of from 300 to 500 H.P. found in central stations. Careful tests which have been made on house-heating boilers of 25 H.P., under test conditions, show an average efficiency somewhere in the neighborhood of from 40 to 50 per cent. It is probable that under ordinary working conditions the percentage would be even less, perhaps might fairly be assumed at 35 per cent. There are a great many tests on large size boilers which show efficiencies running between 70 per cent. and 80 per cent. If we assume an aver-

age working efficiency on the larger sizes of boilers of 65 per cent., we would have right here a difference of nearly 100 per cent. between the pounds of steam per pound of coal secured in the results in a small househeating installation.

Furthermore, small residences and stores find it somewhat impracticable to burn soft coal and usually adopt anthracite on account of its comparative cleanliness, reduced danger from explosive gases, and the greater ease of controlling the fire. While there is not a very great difference in the amount of heat producing units contained in the anthracite and the better grades of bituminous coal, the anthracite costs fully 100 per cent. more.

Multiplying these two factors together, we find that the ordinary household-er will pay four times as much money for a given amount of heat units produced in his boiler as the central station manager would have to pay for the same number of heat units. In such cases, therefore, there is a saving in central station operation which can offset a considerable expense through fixed charges on investment, distributing losses, etc., and still leave a margin of profit for the station.

In the business centres of large cities like Chicago and New York, however, the conditions are very different. The tall office buildings found in the downtown sections are equipped with boilers ranging from 100 to 400 H.P. capacity. Their efficiency will probably average at least 55 per cent. They are supplied in most cases with automatic furnaces which are adapted to the use of the cheaper grades of soft coal. The only advantage, therefore, to be gained from the coal standpoint would lie in the comparatively small difference in the efficiency, between the medium-sized boiler and the very large boiler. But this is not all. While we have gained only a comparatively small amount in efficiency by the substitution of central station boilers, the difficulties of steam transmission in a large city like Chicago, where the streets are already occupied with pipes and conduits for various other utilities, make the cost of transmitting the steam very high.

## **Large Steam Generating Plant in Chicago Would Not Be Profitable.**

From time to time estimates have been prepared on the cost of installing a large steam generating plant in Chicago, but thus far no one has seemed to be able to figure out enough profit

from the operation of the larger plant to offset the heavy investment expenses that would be required. It has, therefore, been the policy of the steam company in Chicago to operate steam plants for only a very limited territory, using one set of boilers for a single building or for several adjoining buildings.

The accompanying sketch, Fig. 1, shows a map of the loop section of Chicago, and gives a fair idea of the various heating plants operated by the Illinois Maintenance Company. It will be noted that in a number of cases several buildings have been connected to one set of boilers, while each building—as a rule—retains its own boiler, or boilers, for use in case of emergency or in extremely cold weather. Although in some instances the company operates boiler plants for single buildings, these contracts were taken with a view to combining the building with other buildings in the vicinity as soon as contracts could be negotiated.

This company secures to a certain extent the same advantage in the employment of labor that is obtained by a central plant. All the boiler plants are under the supervision of a first-class operating engineer, who employs the men. This man, whose title is General Engineer, visits all of the plants daily, watches the general upkeep and the handling of the boilers by the men, and also keeps close account of the consumption of coal. He has an assistant, who acts not only as assistant in visiting the plants, but also as an emergency man to assist in any plant that may be temporarily short-handed. This assistant also makes night inspections of the plants to see that the night engineers are as strict in the performance of their duties as the men on the day shifts.

The entire operating department is under the charge of a superintendent, who reports directly to the manager of the company. It is the duty of the superintendent to keep a general supervision over all the plants, visiting them from time to time, and paying special attention to coal deliveries, so as to insure the proper amount and quality of coal in each plant.

While the company patronizes the local coal companies in the city, it does not depend entirely upon them, but maintains an independent coal yard and supplies a large part of its coal from this source. The coal is bought by the car-load and delivered from the team track,



or from the storage pile maintained in the yard, direct to the plants.

#### Contracts Being Changed From Flat Rates to Meter Rates.

The company originally operated entirely on flat rate contracts, furnishing steam service to each building at a certain fixed price per year. This method of selling steam has been unsatisfactory, and the contracts are being changed as fast as practicable to a meter basis. In the smaller buildings one of the ordinary types of condensation meters is used, while in the larger buildings steam is measured at high pressure by means of St. John meters.

At first there was some difficulty in persuading customers to purchase steam on a meter basis, owing to their ignorance of the cost of steam and also of the amount of steam required. The company during this past year has prepared a printed form of contract which includes a sliding scale of rates for steam, and it has been very much easier to close contracts on a meter basis since the adoption of the printed form. A number of contracts have been closed on a meter basis this last year, and one large contract for a building containing upwards of 90,000 sq. ft. of radiating surface has been signed up and the business taken on in the last month.

#### Meter Rates Lower Than in New York and Other Large Cities.

The rates charged by the company for steam are considerably lower than the meter rates in New York and other large cities. This is due mainly to the fact that the company has little or no investment costs on which to figure a return.

#### Little Steam Piping in Streets.

Thus far there has been very little steam piping done in the streets, most of the work done up to the present time being to connect buildings on opposite sides of a street or alley. As the field of the company's operations gradually extends, there will probably be a somewhat more elaborate system of street connections installed, the plan being to shut down some of the plants which are now running all summer long, in order to cut down the cost of labor.

The company found at first some prejudice on the part of customers against the idea of turning over their boiler plants to an outsider for operation. This prejudice, however, has very largely disappeared, and some of the best architects in the city advise their clients to turn over their heating plants to the company for operation. The company has thus far been very fortunate in operating a number of plants without serious mishaps. More than fifty boilers are now in charge of the company, but probably less than half of these are in use at any one time, on account of the method of operation.

The experience of the company in operating boiler plants has shown that the average steam plant in a store or office building is operated with considerable waste and that careful superintendence will show economies which, taken together, will amount to considerable. These economies, however, are largely offset by waste on the part of a customer when steam is sold on a flat rate basis.

#### Business Gradually Getting on Profitable Basis.

The operation of these plants has not thus far been financially successful. The line of work being a comparatively new one, there were a great many things to be learned by experience, both in handling the plants and in negotiating with customers. The net loss in operation, however, has been gradually reduced, and the outlook for the company appears to be more promising now than at any time since it was organized.

Some one has called this system of heating "Heating from Decentralized Plants." This is true only to a very limited extent. The work of the company would more properly come as a division under the head of "District Heating," only the districts are much smaller than those usually served from heating stations. It is expected, however, that as the plans of the company develop, some of these districts will be considerably enlarged and that from year to year additional buildings will contract for their heating from these centers.

For example, in the case of the Insurance Exchange Building on Jackson Boulevard and Fifth Avenue there are now installed four 350 H.P. boilers. Space has been provided, however, so that this installation can be considerably increased, if desired. The stack and breeching have been designed of a capacity for nearly 3,000 H.P. Negotiations have already been entered into with some of the surrounding buildings to provide steam from this source, and as the company has a long term contract with the building, it will probably be able to connect other buildings to this center.

Another typical plant is that of a large department store which, in addition, supplies steam for an adjoining office building and two restaurants.

Under the present method of operating, the heating company is more in a position to negotiate for steam service than it would be if it had already installed a very expensive plant and distributing system, which imperatively demanded customers in order that it be maintained. It is natural that the customer would endeavor to secure his steam service as cheaply as possible, and, where the customer owns an independent plant already in operation, he

is in a position to be somewhat independent in his negotiations.

#### Insulation Difficult in Chicago's Soil.

The matter of running pipes underground has been quite a serious question in the operation of these plants. Apparently from the nature of Chicago soil some methods of installation which have given fairly satisfactory service in other cities deteriorate here very rapidly, and it has been found that in a very few years after the pipes have been installed there has been left nothing but the iron pipe and the concrete. The iron pipe also seems to be attacked more or less, either by acids or electrolysis, and in several cases it has been necessary to replace the pipe or to install a smaller pipe within the original pipe.

A year ago the company installed an 8-in. pipe line, 300 ft. in length, connecting the boilers in the old Edison Building on Market Street to the boilers in the new office building erected at Madison and Market Streets for the Chicago American and Chicago Examiner. Where the line crosses the street it was laid at an average depth of 9 ft. A tile sewer drain was first installed in gravel, and over this was laid a bed of small rock and sand, to promote drainage. This was covered by a bed of reinforced concrete, in which were imbedded roller bearings for the piping. The pipe was incased in a wrapping consisting of two thicknesses of 1-16 in. sheet asbestos paper. This was painted with special tar paint. A dead air space of 1 in. intervenes between the asbestos covering and a paper felt conduit 1½ in. in thickness and lined on the interior with sheet tin. About this covering were two layers of tar felt paper completely covering the line. This covering also was painted with special tar paint. Outside of this covering was a casing of reinforced concrete 3 ins. in thickness.

The operation of the line thus far has been very successful. The steam service has been continuous without any interruption. No appreciable leaks have developed, and the loss through condensation in the transmission line has only amounted to 300 lbs. per hour. Inasmuch as the steam transmitted in cold weather is about 10,000 lbs. per hour we have a fairly satisfactory percentage of efficiency in transmission.

#### Growth of Company's Business.

When the heating company was first organized many were inclined to regard the plan as more or less impracticable. Criticism was freely circulated against the little company, and many prophesied complete failure of the undertaking. In spite of opposition from engineers and others, the company has gone steadily forward.

# A Determined Bid for Business

R. G. Sturgeon & Co., Peterboro, Issue a Booklet Dealing With Problems of Heating and Sanitation—An Educative Measure to Show People the Value of Proper Appliances.

WITH the determination of impressing on the people of that district the importance of sanitary and heating work, R. G. Sturgeon & Co., of Peterboro, have issued a catalogue. It was completed by R. G. Sturgeon, who is a member of the Ontario Society of Domestic Sanitary and Heating Engineers. The booklet is well written and splendidly illustrated and should succeed in educating the people of Peterboro to the necessity of installing the most up-to-date sanitary fixtures and heating appliances. The company undoubtedly deserve the distinctive title they have assumed, "The shop that does things."

The booklet contains a description of the premises of R. G. Sturgeon & Co., and a number of articles relating to proper methods of heating and sanitation. In addition there is an article on "sewerage for rural homes, schools and factories," a subject to which Mr. Sturgeon has given considerable attention.

The booklet was issued with a practical purpose, as the last two pages attest. The following letter appears:

To the gentlemen who have read this booklet:—

Enclosed you will find an enquiry blank. If you are interested in having your home modern in every respect, if you are building a new residence or renovating an old one, we cannot impress upon you too fully the necessity of having perfect sanitary appliances in your home. We wish you to fill out the enclosed blank, check opposite if you wish further information about heating, plumbing, sewage disposal or water systems. If you wish us to quote you the cost of a hot water heating plant enclose a rough sketch of your house, and be careful to mark the exact size of all rooms. Windows, doors, height of ceiling, and the depth of your cellar. State whether chimney flue extends to cellar. If plumbing and sewage disposal please state what fixture you desire, the height of your house and the number of occupants. Also state the lay of the land from house, whether hilly or level, and the kind of soil, clay, sandy, or stony, or rich loam.

If for water system, state number of fixtures to be supplied, number of persons in house, and style of outfit you want, hand power, gasoline, or electric.

To any person who writes us giving the required information, we will furnish

specifications and quotation free of charge. We have on our staff one of the most efficient sanitary, heating and ventilating engineers in the province, and he is at your disposal. If asking us for quotations on any of the above you will find that our prices and work are right.

Journeymen's race—Robertson 1st, A. Bonar, W. Boe.

Hop, step and jump, open—G. Rattray 1st, Hefrean, E. Sutherland. Distance 34 feet.

Journeymen's race, married—D. Gaw, 1st, Fletcher, Butterworth.

Date..... 191...

MESSRS. R. G. STURGEON & CO  
202 CHARLOTTE STREET,  
PETERBOROUGH, ONTARIO.

GENTLEMEN:—

Please furnish me with more detailed information regarding—

Leader Water System .....  
Sanitary Plumbing.....  
Sewerage Disposal.....  
Hot Water or Steam Heating.....  
(Check opposite the one you wish to obtain information about)

I am building or (underline the one you are doing) renovating my house and I wish to learn more about the system which I have checked. This letter places me under no obligation to purchase.

Yours truly,

Name.....

Address.....

"THE SHOP THAT DOES THINGS"

R. G. Sturgeon & Company

27

We trust to have the pleasure of doing business with you.

R. G. Sturgeon & Company,  
202 Charlotte Street,  
Peterborough, Ont.



## HELD ANNUAL PICNIC.

Toronto, July 27.—The members of the Plumbers' and Steamfitters' Unions held their annual picnic to-day to Grimsby Beach. It was the nineteenth picnic and, as they have been getting better all the time, it will be readily understood that the event was a memorable one. The City of Chatham took out all she could accommodate on two trips, the surplus going by train and being joined in Hamilton by a number from there.

The athletic programme resulted:

Girls' race—Hazel Bruce 1st, Miss Lomas, Miss Middleton.

Boys' race—W. Scott 1st, W. King, V. Creack.

Single ladies' race—Miss Martin 1st, Miss Jeffreys, Miss Tucker.

Married ladies' race—Mrs. Higgins, 1st, Mrs. Brock, Mrs. Scott.

Helpers' race — Simpson, Reid, J. Davis, F. Gerrard.

100-yds. race, open to all—E. Lee 1st, Goodfellow, Rattray.

Employers' race — Wm. Gray 1st, Charley Bragg, Wm. Bush.

Journeymen's race, single, Local 46—E. Lee 1st, D. Rattray, R. Goodwin.

Throwing baseball—Harvey 1st, Hefrean, Simpson.

Running broad jump—Fisher, Robinson, Harris.

Nail driving contest — Mrs. Brock, Mrs. Ward, Mrs. Scott.

Tug of war—Plumbers won.

Fat man's race — W. Storey, A. Brooks.

The committee was composed of N. Ferguson, chairman; A. Fyfe, secretary; W. J. Storey, treasurer; F. W. Jenkins, R. Jordan, H. Fall, E. W. Phillips, J. A. Rattray, J. M. Wood, F. Chapman, D. Bulloch, Geo. Ward.

## Plumbers' Federation.

A new association has been formed under the title of the North of England Plumbers' Merchants' Association, with central offices at 3 York street, Manchester. The objects of the new association are the promotion of good feeling and concerted action between merchants generally and the regulation and maintenance of prices on a reasonable basis of profit. The provisional board is composed of four representatives from the Manchester and District Plumbers' Merchants' Association, two each from the Liverpool and Bradford Associations, and four from the Leeds Association, with A. L. W. Ward as Sec. The meet-



# Complete Course in Sheet Metal Work

By L. W. KOSER

Prob. 5, Plate 18, shows method of developing the Frustum of a Cone whose top is oblique to its base.

Draw the plan Fig. 1 and divide it off into equal spaces.

Then the full size cone as shown by R.B.D. Fig. 2.

Then the line A.C. showing the angle it is cut off at.

Project vertical lines up from each of the points on Fig. 1. until they touch the base line B.D. of Fig. 2, then carry them towards the centre R. until they touch the inclined line A.C. Then carry them horizontally across to the line R.D. and number them the same as Fig. 1.

With the point of the compass set at R. and the lead at D. and with R. as the centre, describe the arc N.M. Lay out on this the stretchout of Fig. 1, and draw lines from each number into the centre R.

Then with the point of the compass set at 7, Fig. 2, describe an arc, cutting No. 7 measurement line on Fig. 3. Then bring the lead against No. 6 and cut No. 6 measurement lines, and continue thus until each one of the points on the line R.D., Fig. 2, has been carried out to the measurement line having the corresponding number or position, then a line traced through the points of intersection completes the pattern.

Prob. 6 shows a Cone with its bottom cut oblique to its base.

The method of developing is the same as Prob. 5.

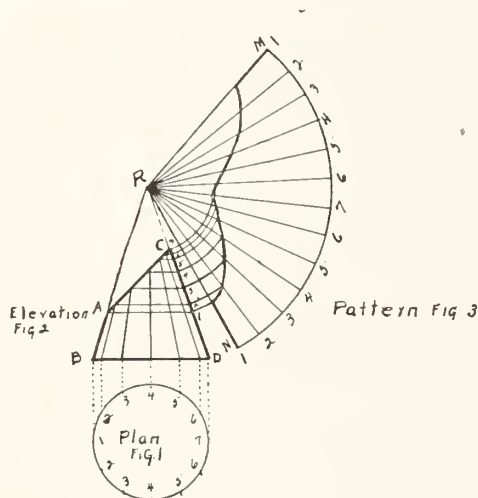
First draw the plan Fig. 1 and space it off. Then draw the Cone R.A.B. Fig. 2 and the Oblique line C.D.

Carry the points from Fig. 1 up to the line A.B. then towards the centre until they touch the oblique line C.D. Then parallel to the base until they touch the line R.B.

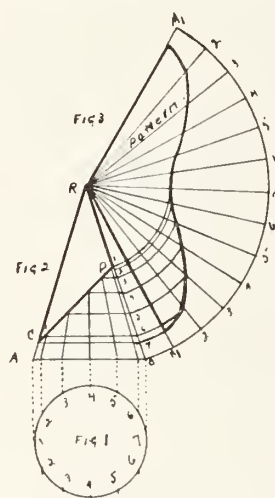
With a radius equal to R.B. and R. as a centre, describe the arc N.M. and lay off the stretchout of Fig. 1.

Then with R. as a centre, bring the lead against each one of the points on

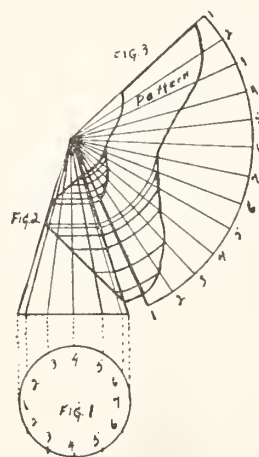
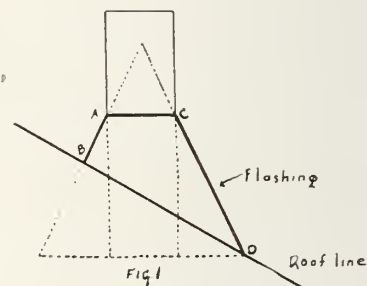
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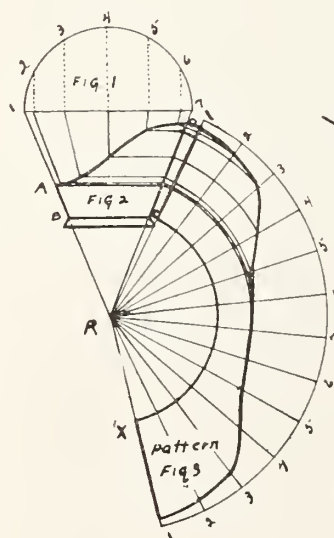
PROBLEM N<sup>o</sup> 5



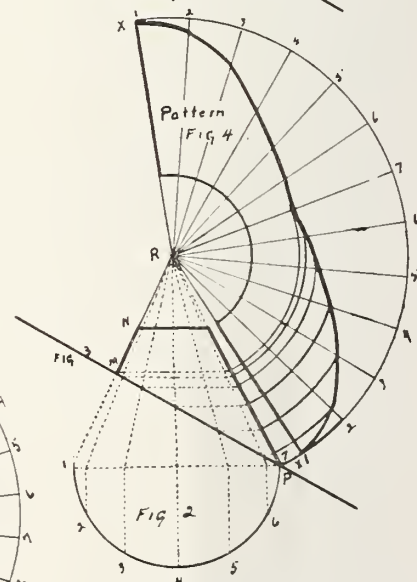
PROBLEM N<sup>o</sup> 6



PROBLEM N<sup>o</sup> 7



PROBLEM N<sup>o</sup> 8



PROBLEM N<sup>o</sup> 9



the line R.B. and swing an arc, cutting the measurement line having the corresponding number or position.

Prob. 7 is a combination of Prob. 5 and 6.

The student will now readily see, that in drawing the patterns for cone-shaped articles it is only necessary to draw one-half of the plan, as twice this space can be set off on the stretchout; in fact,

where space does not permit and both sides of the article are the same, it is only necessary to draw one-half of the pattern on paper, as twice the pattern can be laid off on the metal.

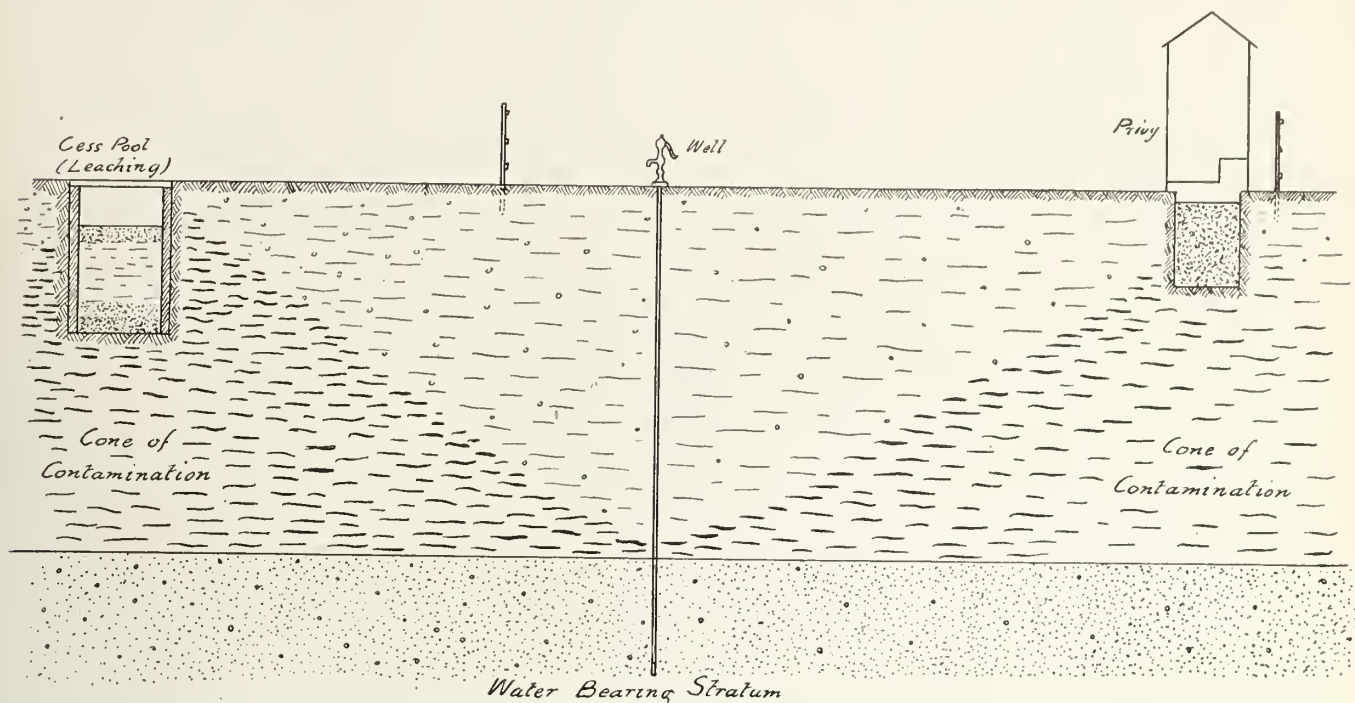


Fig. 1.

## Methods of Sewage Disposal

By Chas. W. Chandler.

OWING to the interest taken in this subject, more especially in connection with the disposal of domestic sewage from isolated country buildings, before concluding the series of articles, one or two further examples of the simpler forms of septic tank may prove interesting.

As pointed out at the commencement of these articles, the widespread evils of the privy vault and cesspool, their inevitable befouling in the immediate vicinity of the house, of earth, air, and water; are not to be tolerated. Leaching cesspools should be absolutely pro-

hibited by law. They are even more dangerous than the privy, for the liquid sewage in them can penetrate further into the surrounding soil than the faecal matter of the privy vault.

The contaminating effects of cesspools and privies is illustrated in fig. 1, which does not at all exaggerate the conditions almost always found in towns and villages, where these methods have been in use for any considerable length of time.

Fig. 2 shows a septic tank for sewage from a cottage where the water supply is not abundant, and it would probably

be sufficient to make provision for 10 gal. per head per day. Assuming that the cottage will be occupied throughout the year by an average of four persons, the septic plant may be designed on this plan.

The tank is formed by utilizing a 24-in. dia. stoneware pipe and making a concrete top and bottom to it. The whole is of such a nature that it could be constructed with such labor as would be available in any village or hamlet. To construct the tank it is necessary to dig a hole 3 ft. in diameter of the requisite depth, and then lay in the bottom

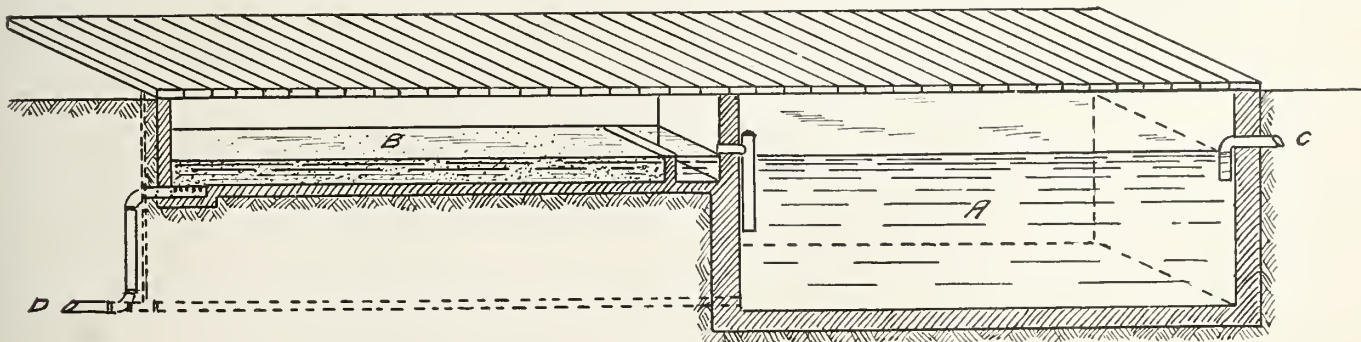


Fig. 3.



6 inches of cement concrete. The 24-in. pipes should then be pushed into the concrete and the surface of the latter tamped or "punned" both inside and outside the pipe so that the concrete will be solid and will adhere to the unglazed portions of the pipe and give a watertight bottom. When the concrete is set in the ground may be filled in around the pipe up to the level of the under side of the concrete curb.

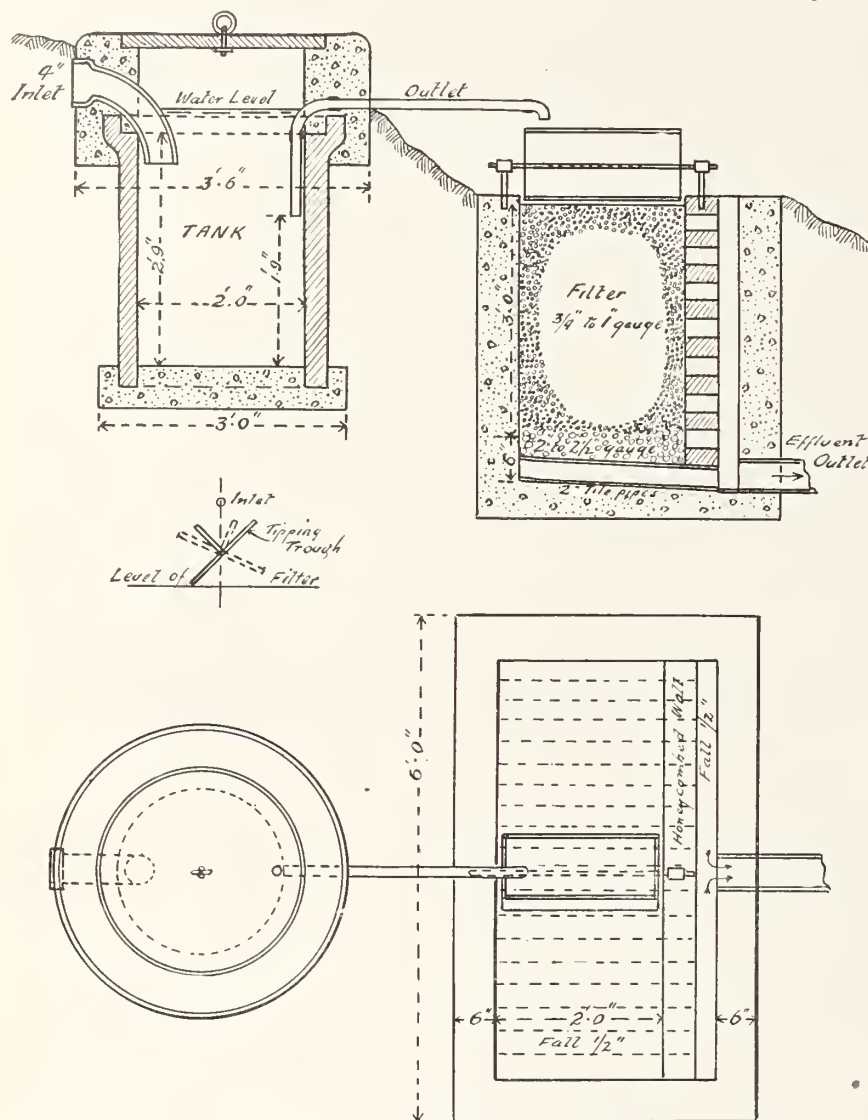


Fig. 2.

The filtering medium should consist of the hardest and least pliable material that can be obtained locally. After the material is broken to gauge, all dust should be carefully screened out and then a depth of about 6 inches of the large material should be laid at the bottom around and over the agricultural pipes, leaving about 3 feet for the finer material. The space of  $\frac{1}{2}$  inch should be left between the end of each abutting agricultural pipe and the outlet ends carried through the honey-combed wall into the effluent channel.

Another simple tank arrangement for septic treatment of sewage from an iso-

lated building is shown in fig. 3, consisting of A, the septic tank proper with submerged inlet and outlet, and B, the second receptacle with filter bed of broken stone. This arrangement provides for a continuous flow of the sewage through the tank and filter bed to the outlet D, from which the purified effluent flows into a creek, river, or lake, according to the position of the building. A feature of this tank is the partition

wall in the second compartment, which acts as a weir, over which the sewage falls and becomes aerated before entering the filter bed.

#### PREVENTING ODOR.

Editor Plumber and Steamfitter,—I have recently installed a septic tank outfit using Quinn valve and connecting up in usual way with only 3 ft. soil pipe out of roof. The roof line is still 10 ft. higher than soil pipe, and above roof again are several trees close to house. Now, this job gives out an odor

at times through fresh air inlet, so I closed it up with a bag and now this stack sends down an odor to the back door directly under the stack. I have put on a double tee 4 in. to prevent a down draft, but the people claim that the odor is just as bad. Can you tell me what is wrong? I have eight jobs working here put in all about same way. Could I cut the fresh air inlet off of all future jobs and still get as good results? Let me hear what you have to say about same. Thanking you in advance for reply.

W. B. G.

The adverse conditions are undoubtedly caused by the wind, when in a certain direction, impinging upon the roof and also being checked by the trees in the near proximity, causing swirls and eddies, and a compression of the air around the house, which can only result in one thing, viz.: a down drought.

I would suggest the raising of the stack to a point clear above highest part of roof, and this appears to be about the only remedy in sight. The closing up of the fresh air inlet would not do any good, in fact, this would if anything rather tend to retard any up-current there might be in the stack. The removing of the trees, which probably cause the greatest obstruction to the free current of air over the building, is of course out of the question.—Chas. W. Chandler.

#### STOPPING A LEAK ON OLD PIPES.

Editor Plumber and Steamfitter. — Can a leak on old water pipes be stopped? They have been in for several years and I don't want to tackle the job unless I am reasonably sure of success.

C. Hamilton.

Generally it is better to put in new pipes but if the customer won't stand the expense you can try some good reliable cement. Clean the fitting thoroughly after shutting off the water. Keep the pressure off until the cement has hardened.—D.C.H.

#### WIPED JOINT LEAKS.

Editor Plumber and Steamfitter. — A couple of wiped joints on a plumbing job leak a little. Can they be made tight without re-wiping?

A. B. J.

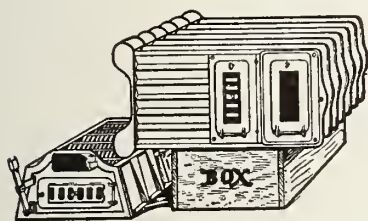
Possibly. You can try holding a brick under one of them and tapping the joint lightly with a hammer handle thus forcing the lead close together. If this does not cure the leak the joint will have to be re-wiped. We have observed leaky joints so repaired successfully.—D.C.H.

# Tips for Helpers---By "Phoenix"

## CHAPTER 3.

Developing both muscle and common sense. That's you, my boy, for the next four years until your apprenticeship is over. A steamfitter is sometimes looked upon as a lazy man because he, occasionally moves slowly, or perhaps stops and takes time to plan out just how he will proceed. I am going to show a couple of pictures of so-called boiler setting in this article and I want you to take particular notice of the remarks and use your good horse sense accordingly.

I wouldn't have you for one moment try to be lazy, but I would have you study to save yourself all the bumps, bruises and knocks that it is possible to save in this rather strenuous trade of ours. I find in the description given of the proper means to easily set up a house heating boiler advice running something like as follows: "You take the boiler down cellar (in your pocket maybe—it's always SO dead easy to get a boiler down cellar more especially if



No. 1.

it's all in one piece as shown), and when in the cellar get the base fixed. Then you just set the boiler on a box as shown in Fig. 1. So far so good. The job's half done. (Maybe.) Then all you have to do is to just grab the boiler as shown in Fig. 2, and drop it into place"—Everybody's doing it—Nix.

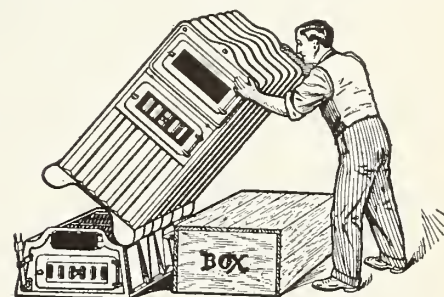
Simple, ain't it, when you once understand how. That boiler weighs anywhere from 900 pounds up to nearly one ton. One man handles it alone, understand as shown. Use your horse sense. What do you think about it? Ever lifted on a boiler yet? If not you take the advice of one who has and don't begin according to these pictures. Take the man in picture 2. When that boiler gets off its balance do you suppose that he can hold it from smashing down on the farther side of the base and probably breaking something? Not on your life he can't. He might balance the boiler, as shown, but I doubt, exceedingly, if he could alone elevate a 1,500 or 2,000-lb. boiler off the box from the position

shown in Fig. 1 to the position shown in Fig. 2. Now with a boiler of the particular type here shown, there are just a few points that can be mentioned that will give almost absolute safety and here they are. In the first place it will require two good husky men to do the job right and without waste of time or need of using ropes or pullies. Putting the boiler on a box is alright. It elevates the boiler and gives the men a chance to get a better hold. One man should be at each end of the boiler. Then lift until boiler is in position shown in Fig. 2 and, while the fitter runs around to the opposite side the helper can balance the boiler as shown. With one man on each side of the balanced boiler it can be easily and safely lowered to place.

There is another little point that might help. If you lift the boiler from horizontal to half vertical position without putting some soft small flat pieces of wood just where the edges will first strike the ash pit, you run a great risk of having the boiler slip and skate around. Perhaps it may get away from you and in the effort and confusion some one will get jammed or pinched. I have seen a boiler come back on two men one of whom got a broken leg from this very cause and manner of lifting. A few chips, or even a chip for the iron to bite into would have saved "Jack" his broken leg. It might be a good thing to put a one-inch board on the far side of the ash pit for the boiler to land on when lowered to place as I spoke of. Now this is a description for this one type of boiler only, for there are more styles than you have fingers and toes, and some of them are handled differently. You can hardly imagine how foolish some fitters are and how they waste both time and muscle. I was sent, several years ago, to help another fitter set up a rather large boiler. We each had four helpers and in addition he pulled off two laborers from another job to help. That made six husky men. The boiler was about ten or twelve sections and as I remember they must have weighed something like four or five hundred pounds each. We puffed and struggled and fell over each others legs in carrying the first sections to place. Say there were so many men that we fell over one another fairly. I said, "Say, Jack, gimme your helper and just watch three men set up the next section easy." We ended it to place and then got it on a stout box and

tipped it to place dead easy. In fact, two of us could have done the job on a pinch if we had had to.

There's a time to lift and a time to plan. Get this and live up to it. Don't lift until everything is ready, safe and each man has his hold. Be sure everybody knows just what he has to do. Some excitable or over anxious crank may queer the whole deal and get some one badly hurt if you don't watch out. On a job where several men must lift the boss should never take a hand. He can do more good just bossing if he knows how, for he can keep those anxious ones from doing damage. You take a boiler of the upright kind—a base, fire pot, one, two or three rings and a large dome. They screw together mostly with screw nipple connections. If two men know how to handle themselves and the ordinary boiler of this kind they can set it up ready for running the



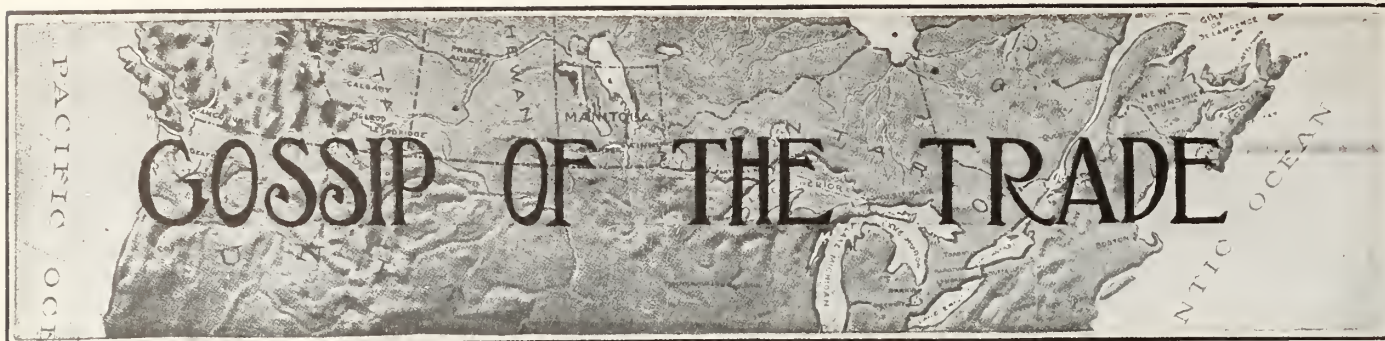
No. 2

pipes (not putting on the trimmings) in half an hour's time. I have done it on a bet several times and always won out. Set the base. The fire pot can be canted over on it from the ground. The rings are not much of a lift and can be quickly made up. One man can stick a 2x4 into the fire pot door and keep it from turning. The dome is the only severe lift. Place a barrel by side of boiler. Lift the dome on to the barrel. Stop and catch your breath. Then bend down and both take a secure hold on the dome and lift it easily over on to the rings and make up. As I said it can be done in half an hour and sometime you may have a chance to try it.

A very heavy boiler, or extra large sections may require block and tackle, but you will find that on most of the smaller jobs it is done by sheer brawn and muscle. Therefore, these few words and suggestions in order to put you wise as to how to handle yourself

(Continued on page 36.)





#### Starts Tinsmithing.

Winnipeg, Man.—C. Cook has started in the tinsmithing business here.

#### Start in Business.

Prince Albert, Sask. — Curry Bros. have started in the plumbing business here.

#### Change in Firm.

Duncan, B.C.—The plumbing firm of MacKay & Abbott have been succeeded by MacKay & Truesdale.

#### Want Heating Plant.

The city of Moose Jaw is considering the installation of a municipal steam heating plant.

#### Joins Hayman Staff.

New Glasgow, N. S.—J. E. Morrell, of Roxbury, Mass., is the latest addition to the plumbing staff of A. E. Hayman.

#### New Partnership.

Ottawa.—A new partnership is announced, that of Holloway and Son, plumbers and steamfitters, Somerset Street.

#### Union Officers Elected.

Victoria, B. C.—At its meeting on Tuesday evening local No. 324 Journeymen Plumbers and Steamfitters elected the following officers: President, Mr. A. Myles; vice-president, J. L. McArthur; financial secretary, A. F. Overs; recording secretary, G. Lister; secretary, D. McDowell; treasurer, S. McLaran; business agent, E. A. King.

#### Helpers Stole Solder.

Toronto, Ont.—Two helpers are accused of stealing a quantity of solder from J. C. McFadden, who had a plumbing contract at the Jewish Tabernacle. They were recognized by the keeper of a second hand shop as regular customers. The magistrate committed them for trial.

#### Opening Meeting Held.

Montreal, Que.—An open meeting of the plumbers and steamfitters of Montreal was held in the Labor Temple, on Tuesday evening, July 16. Addresses were delivered by A. Verville, M.P., G. R. Brunet and Richard Lynch, of the Trades and Labor Council. There was a good attendance.

#### To Represent L. Wolff Co.

Charles W. Chandler, 651 Broadview Ave., Toronto, has been appointed Canadian representative of the L. Wolff

Manufacturing Co., Chicago. He will call upon the jobbing trade in all provinces in the interests of that firm.

M. Chandler is one of the best known men in the trade. He has been with the Standard Sanitary Co., and latterly



Chas. W. Chandler.

with W. A. Porter & Co., and has made a wide acquaintance among the sanitary and heating trades. Since the first of the year, he has been writing a series of articles in Plumber and Steamfitter on "Methods of Sewage Disposal," which has served to familiarize his name with members of the sanitary fraternity.

#### Had no Permit.

The following letter, appearing in a Victoria, B. C., newspaper will be of interest:—To the Editor: Allow me to make a correction in your issue of yesterday. You state that Messrs — were charged and fined \$20 in the police court for installing plumbing work without a license.

This statement is not true and likely to do our firm harm. We have held a plumbing license covered with deposit since commencing business in Victoria.

Where we actually offended was in commencing to install the plumbing of some property to oblige a customer without first having obtained the per-

mit so necessary to the inspector's happiness. Whether the punishment meets the crime or not, this offence Mr. Editor, in my opinion, hardly necessitates the acting magistrate's concluding remark to myself, "in default, distress, or one month's imprisonment."

So much for our case. Bad, say some, but not nearly so bad as that of the suffering public who for each job of plumbing installed, contribute to the upkeep of the department the sum of \$4, an increase of 100 per cent since February 1st, 1912.

Editor's note:—That the sanitary contractor should suffer in such a case seems unfair. The customer who benefited by the haste with which the work was done, should have protected the plumber or, at least, paid the fine.

#### J. E. Farrell Married.

The Despatch and Tribune of North Bay says: The many friends of J. E. Farrell, the well-known business man of North Bay, were agreeably surprised to learn that that gentleman had quietly joined the benedicts and slipped away on a wedding trip. The marriage took place at Berlin, Ont., Thursday, June 27th, the bride being Miss Cecilia Fahrenback, of that place. Mr. and Mrs. Farrell left for Toronto after the ceremony for a steamer trip through the Thousand Islands and on to Quebec before returning to take up their residence in North Bay.

#### TIPS FOR HELPERS.

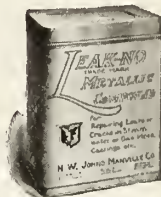
(Concluded from page 35.)

to the very best advantage. A man is a fool to pick up a section and attempt to lift it to place alone, or carry a 50-ft. radiator on his shoulder just to show his strength as I have seen done. The man who did so is, to-day, a broken down old man under 55 years of age. He's all in and nobody to thank for it but himself. He didn't get a cent more pay for making such a horse of himself and to-day he can't make a helper's wages. So use your strength with understanding, my boy, for its your capital just now. Later we may discover how brains are part of the capital also.



## Defective Radiators, Pipes, etc. Made New at Small Cost

If a radiator gets cracked; if a waterback develops a blow-hole; if a fire-pot cracks; if a pipe springs a leak, or if anything made of iron or steel develops a crack, spongy spot, sand hole or blow hole, J-M LEAK-NO will repair it and repair it for good.



## J-M Leak-No

becomes a permanent part of the metal to which it is applied by **amalgamation**. It expands and contracts equally with iron or steel.

It is warranted to stop any ordinary leak in iron or steel against any pressure of oil, steam, gas, air, ammonia, or water, and to stand any heat or chemicals that iron will stand, if applied according to directions.

Write for Booklet and Prices.

**The Canadian H.W. Johns-Manville Co., Limited**

Manufacturers of Asbestos and Magnesite Products.

Trade **ASBESTOS** Mark

Asbestos Roofings, Packings, Electrical Supplies, Etc.

TORONTO

MONTREAL

WINNIPEG

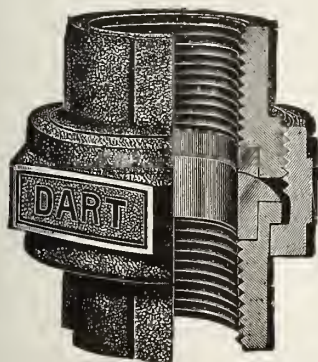
VANCOUVER

963

Use Dart Unions for making pipe connections and you have the best possible insurance against leaks and both-

### BRONZE TO BRONZE

Bronze on both faces of the joint, it will never rust or corrode.



The ground ball-shaped seats allow a quickly and easily made connection whether pipes are in or out of line.

**YOUR JOBBER HAS THEM.**

Every Dart Union has the Trade Mark cut on it and a 2 for 1 guarantee, too.

**Dart Union Co. Limited**

TORONTO - ONTARIO

# "MILLER"

Hot Water and Steam Radiator

## VALVES

**Every One Thoroughly Tested and Absolutely Guaranteed**



Hot Water Quick Opening Radiator Valve.

Most prospective plumbers are very careful in the selection of valves—very often too careful. They may be using a valve of old-time construction which they think is the best that is procurable. Time is constantly changing. New valves are taking the place of the old—valves with improvements.

Such is the case with the "Miller" Valves.

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage.

The cone-shaped disc prevents sticking.

Our superior

### STEAM RADIATOR VALVES

have very low seats and a high lift of disc.

We manufacture both valves from  $\frac{1}{2}$  in. to 2 ins., with or without union; also union elbows.

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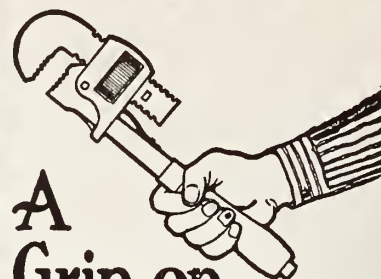
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"J.M.T." Cushion Compression Bibbs, Basin and Bath Cocks. Morrison's Fuller Work. Combination Basin and Shampoo Cocks, Fuller and Compression. Self-Closing Bibbs and Basin Cocks—six styles. "Elgin," "Simplex" and "Astoria" Low Tank Closet Combinations. "Thompson" Patented Smoke Machine for testing plumbing—light, strong, efficient. "Victorian" Vitreous-China Lavatories—the latest and most sanitary fixtures.



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The celebrated "J.M.T." Valves for Steam, Water, Gas, Oil, etc. "Morrison's" Guaranteed Stop Cocks for Steam, Water, and Marine Service. The Genuine "Hancock" Inspirator—the best all-around boiler feeder. "J.M.T." Injector—simple and efficient—thousands in daily service. Steam, Vacuum and Combination Gauges. Revolution Counters and Engineers' Clocks. The "Heintz" Steam Trap—a genuine steam saver.

## A Guarantee of Long, Economical Service

goes with every order that we ship. Our lines are strictly up-to-date, are made of the highest grade material, and constructed by long experienced workmen. Install these goods and you INSURE YOUR BUSINESS AGAINST LOSS caused through dissatisfied customers.

**The Profits Are Good and the  
Service Efficient**

**Write for  
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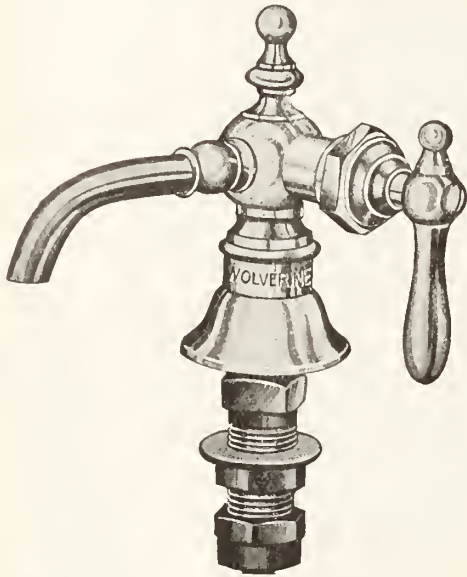
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# "WOLVERINE"

## HIGH GRADE PLUMBING GOODS



### "The Kind That Increases Trade"

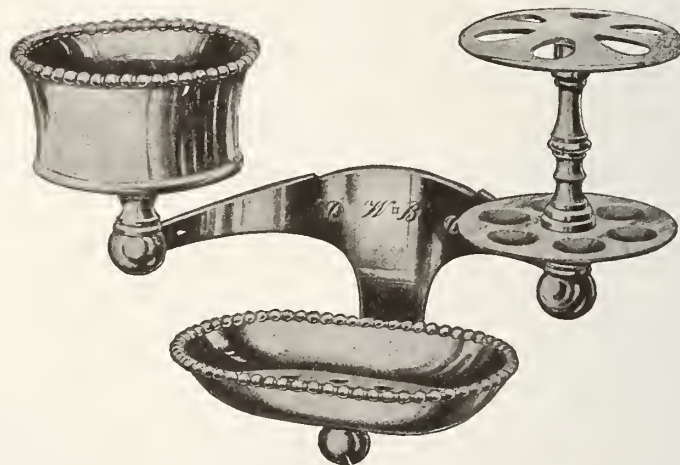
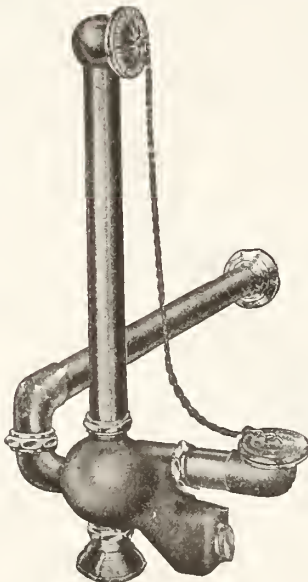
If you are not handling our high grade products you are overlooking a real live trade winner.

"Wolverine" Goods are strictly up-to-date in design and construction and are the result of wide experience.

They are excellently finished and very attractive, and will give your customers perfect satisfaction.

You cannot risk your reputation by selling inferior goods when you can get the best just as easily. All "Wolverine" lines pay a splendid profit.

*Write at once for catalogue and particulars*



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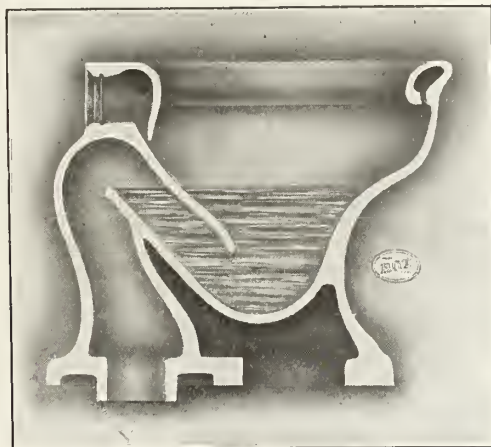
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TRADE  
**B.O.T.**  
MARK

# Syphon Closets

We devote our entire energy in the manufacturing of the well and favorably known B.O.T. Combinations which, we believe, have more up-to-the-minute practical and exclusive features than any other outfit on the market. The progressive discriminating plumber will find by their use a solution of his water closet difficulties.

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The B.O.T. Non-clogging Bowl has a straight down leg expanded where others contract. You can actually look up the outlet and see the crown of the dam. They rough in at 12" with slip of joint elbow connection to allow for variation from exact measurements.



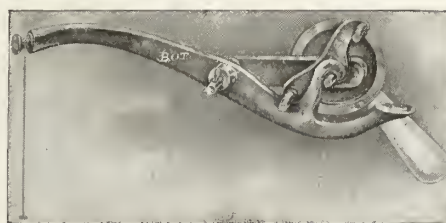
Syphon Washdown showing contraction and restriction. Note the shelf, 9 in. long. Observe the narrow point, the transverse plane and the contraction.



### SYPHON JET

showing contraction and restriction. Note shelf, 3-5 in. long. Observe the contracted winding outlet and a transverse plane causing stoppage and clogging.

## Fool Proof Lever



**B.O.T. Patent Lever.** Powerful, positive, and absolutely fool proof. It is directly connected and works either to right or left.

## Woodwork Guaranteed Against Cracking

B. O. T. Tanks are made with lock level dove-tailed joint, and guaranteed against cracking or splitting. Most people think tanks have to be nailed. If we thought so we would not be able to guarantee them. Made in woods from **Genuine Mahogany** to **Straight Cut Oak**. Can supply Vitreous China Tanks, too. Fittings are substantial, and made to last. Investigate our B. O. T. Ball Cock—it is making friends everywhere.

Write for full particulars.

Every Plumber and Steamfitter is invited to visit our exhibit in the Process Building at Toronto Exhibition.

# The B.O.T. Mfg. Company, Limited

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# NATIONAL VALVES

## — — WE STAND BACK OF THEM The National Improved Thermostatic Valve

The advantages offered by this valve are so marked as to render other types of thermostatic traps practically obsolete. A strong statement, certainly, but a glance at the following details of construction is convincing:

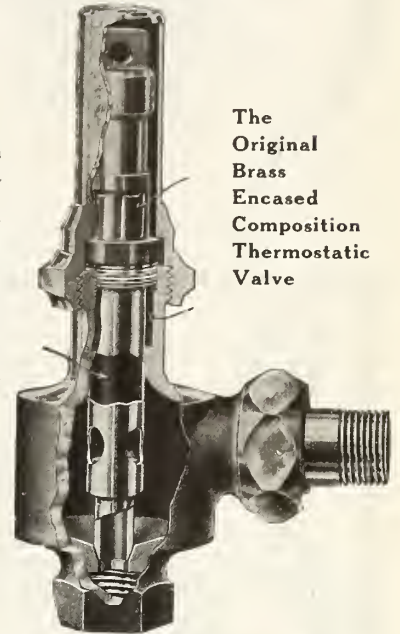
BRASS-ENCASED COMPOSITION insures absolute freedom from deformation troubles. Carbon is held in place by spring-friction. Trap is entirely self-adjusting and *stays* adjusted. It operates at any pressure from atmospheric to 30 lbs. with live or exhaust steam.

There is positively no chance of leakage. There are no small parts, no small openings or anything to cause the least trouble. It is, without question, the most simple in construction of any thermostatic valve made.

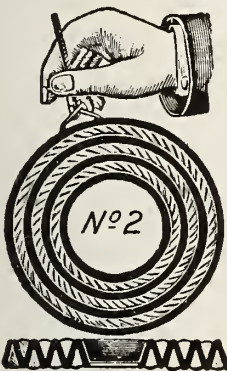
On the results of tests made with all traps on the market, a prominent engineer has specified and used over 3,000 Nationals—simply because the National proved itself best by test. We give a five-year guarantee with every National Thermostatic Valve sold. Write for complete descriptive folder.

**National Steam Specialty Co.**  
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Surplus, Dunn & Co., 74 Murray Street, New York City  
See Sweet's Index, Pages 1139, 1140, 1141



The  
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Brass  
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Composition  
Thermostatic  
Valve



## "WORLD-GOETZE" NO. 2 GASKETS

ELASTIC CORRUGATED COPPER—WITH ASBESTOS LINING

In these gaskets are combined all the strength and elasticity of copper with the heat resistance and "pack-ability" of asbestos. They make **positively** and **permanently** tight joints in flanged piping where nothing else will—where the best of other gaskets fail.

Why not try them on a few of your most troublesome joints? Put them in the very places where the best of other gaskets have failed and be guided by the result in your future purchases of gaskets.

**T. McAVITY & SONS, Limited**

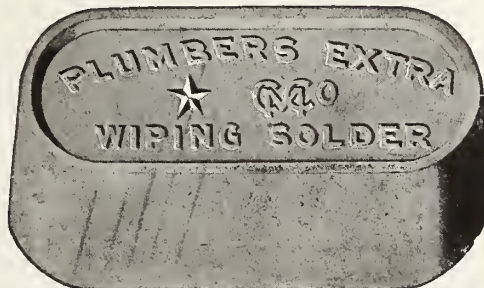
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SOLDER



IT WORKS LIKE  
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MANUFACTURED AND GUARANTEED BY

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THE SOLDER WITH THE TIN IN

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# WHICH



1 to 2 in. 25B. Beaver

do you prefer—to pay two men to thread a 2 in. pipe with an ordinary die stock, or pay one man to do it with a

## "Beaver" Adjustable Die Stock

### IN LESS TIME ?

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No Fuller Ball

One-eighth turn gives full flow.

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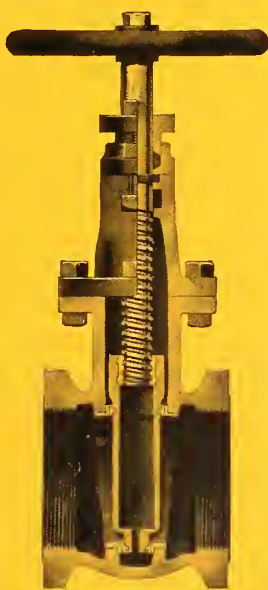
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*and Metal Worker of Canada*

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CHICAGO, 140 S. Dearborn St.

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NEW YORK, 115 Broadway

Vol. VI.

Publication Office : TORONTO, AUG. 15, 1912.

No. 16



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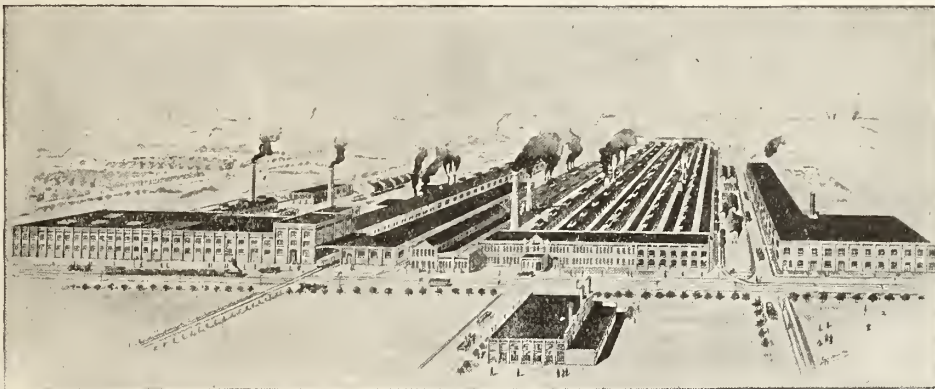
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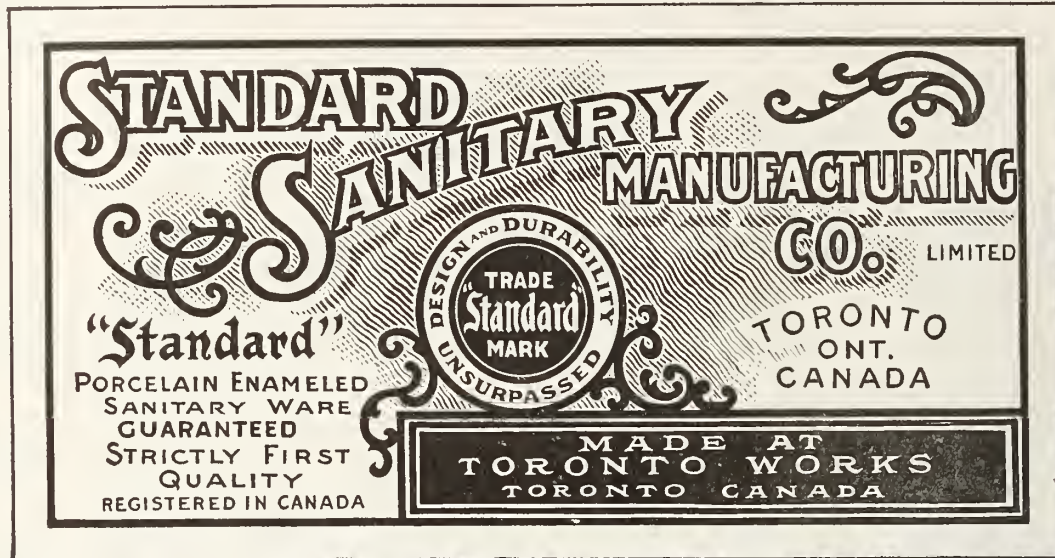




# "Standard Sanitary"

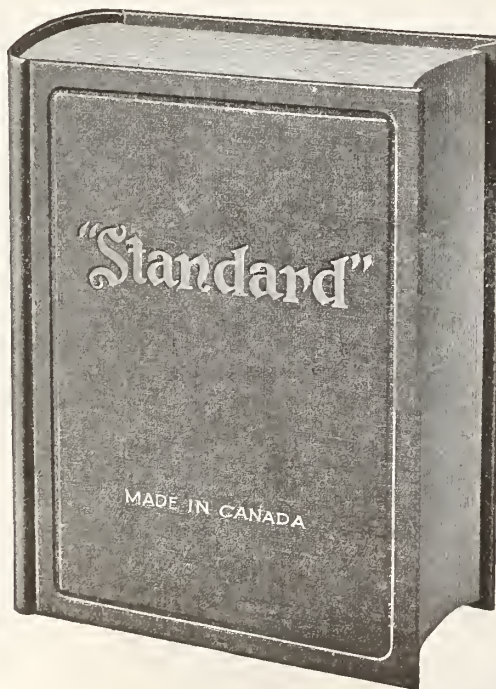
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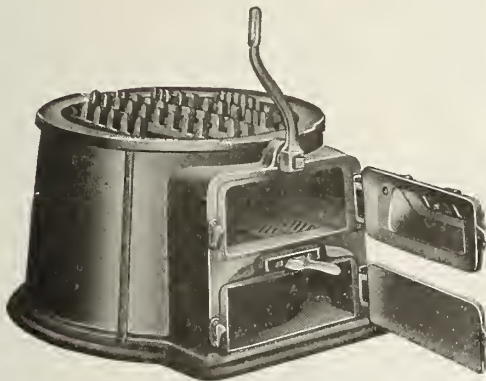
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

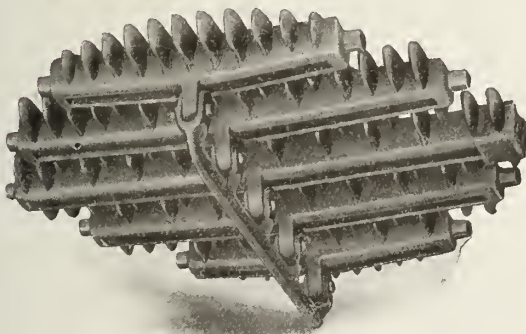
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

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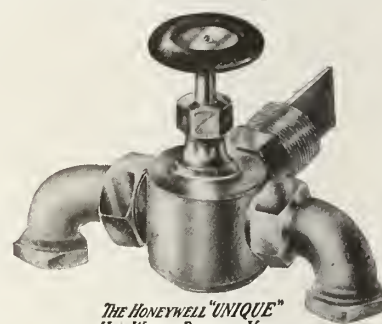
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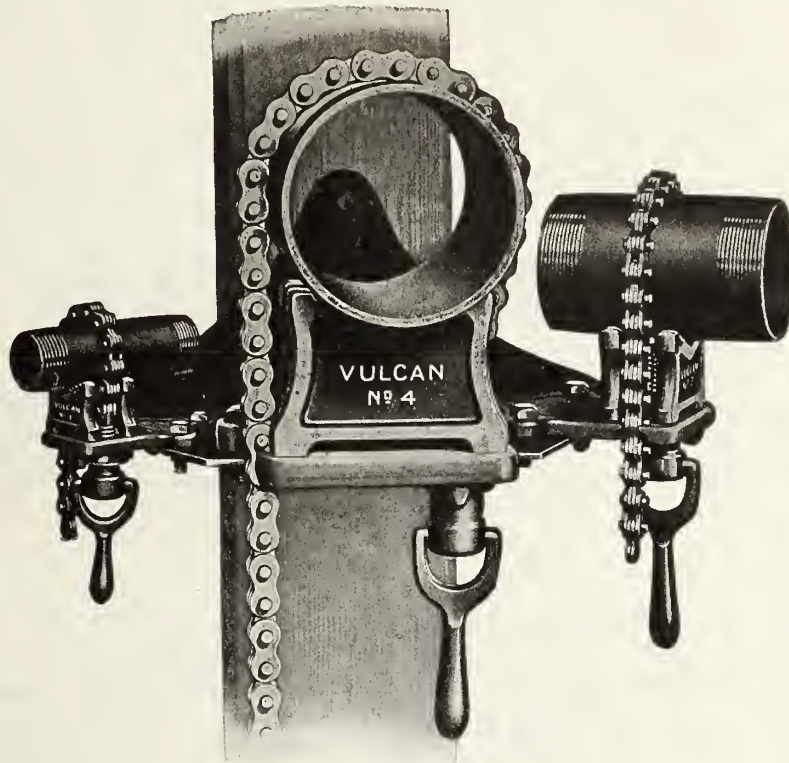
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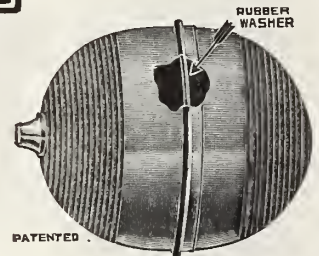
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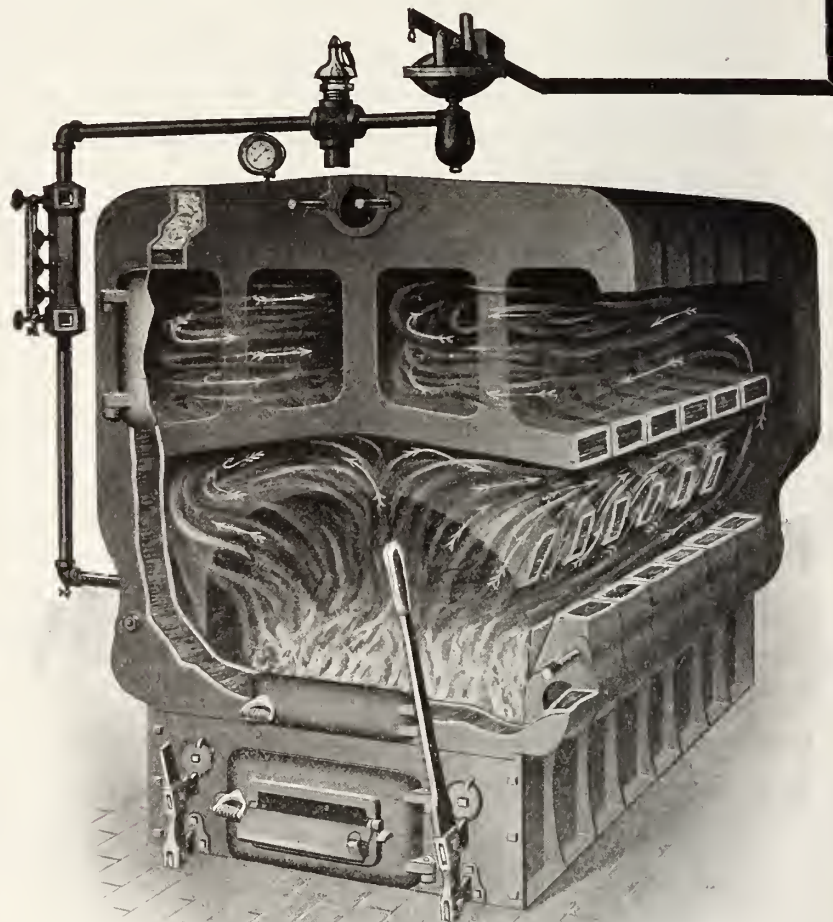
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# Annual Convention of American M.P's.

Big Gathering at Salt Lake City—The Question of the Sub-contract was One of the Most Important Discussed—An Appeal Against General Contractor Will be Made.



**S**ALT LAKE CITY, Utah.—The thirtieth annual convention of the American National Association of Master Plumbers was held here, with delegates in attendance from every state in the union.

On the platform at the opening session were the following:—Benjamin Goddard, president of the Bureau of Information of the Mormon Church; Joseph E. Caine, secretary of the Commercial Club; National President Eynon, National Secretary Lewis Deuble, National Treasurer William McCoach, Chris Irving, Daniel G. Finnerty, A. Selden Walker, John Trainor, E. D. Hornbrook, William H. Halsey, David H. Roberts, Jeremiah Sheehan, Carl J. Stein, Andrew Curtin, Frank Patterson, Frank Fee, Walter Nolan, Harry Mellon, Robert V. Lambert, F. Klimm and W. Emmett Crosby.

The first session was taken up largely with speeches of welcome and reception of communications.

On the morning of the second day, the session opened with the reading of the president's address. Mr. Eynon made a number of good points, among them being the following:

"We have pleaded with federal and state authorities for laws to regulate and protect humanity from contagious diseases, and our demands have been insistent with local boards of health to make and enforce laws to properly regulate and inspect all departments wherein the sanitation of the community may be perfected.

"We have urged better systems of drainage for our cities and towns, so that our homes, public buildings, factories, schools, and the great tenement districts in the large cities may be cleansed and made healthier by disposing of the wastes of the human body, and to dispose of the waste called sewage so that decomposition will not interfere with health and happiness.

"The master plumber, through the National Association, undoubtedly has been and is now the chief factor in the

health progress our nation has made during the last thirty years.

"Late federal statistics record the lowest death rate in the history of the nation, and, as one of the greatest journalistic writers has said, the master plumber may be counted upon as one member of society deserving of commendable credit, and that the human family is now living more years and with better surroundings to enjoy those years, than ever given to civilization before.

"It is my honest belief that the master plumber coined the word, "Sanitary," for it was his voice we heard first of all talking for and about it, and telling its great virtues.

"It is his voice we hear to-day, asking for more progressive laws and inspections to further protect the people—he is ever watchful and on guard."

In regard to the question of sub-contracting, he said:

"The success of our New York members in securing the passage of an act providing for the segregation of all contracts for plumbing, drainage, heating and ventilating on public work in the state, should be an incentive to other state associations to make an earnest effort to secure similar legislation in their respective states. We should also make a united effort to induce the Federal Government to take similar action. We all know the difficulties we sometimes have with general contractors, and how irresponsible they are in so many cases, at least, not as desirable to deal with as city, country and state governments. The public will profit by a better class of bidders competing for public work.

"I earnestly recommend that we take concerted action to secure legislation for the separation of plumbing from the general contract. It should be a state issue, and handled by the states. In this connection I do not think it wise to adopt too drastic measures to compel our

A view of the delegates—The insert shows the newly elected president, Frank J. Fee.

members to follow a certain line of action.

"Nationally, we should use our influence with members of Congress to have an act passed to compel the Supervising Architect to let the plumbing and heating be separate from the balance of the work."

## Resolutions Dealt With.

Some features of the report of the Resolutions Committee were particularly interesting.

## Three Resolutions Offered by The Springfield, Mass., Association.

Constituted a set of three resolutions, submitted by the Springfield, Mass., Association: 1st. urging that the practice of gas companies, through their appliance stores, selling gas appliances and equipments and also furnishing the pipe at cost, be condemned.

2d. That the matter of plumbing contracts be taken up with the Government condemning the practice of sub-contractors.

3rd. That the matter of the sale of bar equipment by brewers, direct to saloon-keepers, be thoroughly discussed and a way found, if possible, to eliminate same.

We condemn the pernicious practice mentioned in articles 1 and 2 of this resolution but see no way by which the National Association of its Board of Directors can remedy this evil and your committee recommends that this question be referred to the various Local and State Associations throughout the country for adjustment.

## An Educational Company.

A resolution submitted by David Craig of Boston, stating Be It Resolved: That



the N. A. M. P., through its executive committee set aside such money as will appear sufficient to make public, through the press and otherwise, all and any information that will tend toward public enlightenment and will publicly deny

any printed or otherwise misleading information that tends to slur or injure the plumber or plumbing in the public estimation. Approved.

The election of officers resulted as follows:

President—Frank J. Fee, New York.  
Vice-President—Chris Irving, Denver.  
Treasurer—William McCoach, Philadelphia.  
Secretary—Chas F. Murphy, New York.

## Stray Notes of the Calgary Convention

### **FINEST THING IN THE WEST.**

While stopping off at Regina, on the way back from Calgary, some of the delegates extended their sympathy to Harry Potts, whose house and store were both razed to the ground by the cyclone which recently swept the Saskatchewan capital.

"Oh! it doesn't make much difference," quietly remarked Mr. Potts, with the true Western spirit. "We can start again all right."

And evidently Mr. Potts can start again. Indeed he is already started.

The spirit shown by Regina, and Regina citizens, some of the delegates say, was the finest thing they encountered while in the West.

### **SUNNY ALBERTA HAS TO ENDURE MANY QUIPS.**

Delegates to the Calgary convention are still laughing over the fun they had with their hosts over that phrase, "Sunny Alberta." While the convention was on it was raining pretty regularly in Calgary. There was nothing very startling in that. It was raining pretty regularly all over the Dominion, but that fact was passed over lightly by the visitors. That "Sunny Alberta" phrase tickled their risibility.

One afternoon, when a number of Montreal delegates were inspecting the establishment of President Young, some one rushed to the door and called every one out. "The Sun," he shouted,

pointing to the sky. And there stood all these good easterners, gazing upward, not caring for the inquiring glances of the passers-by.

But there is no doubt that the necessary arrangements can be made.

"These Western Boys," certainly gave us a great time," remarked one



Wm. Mansell, Toronto, and R. J. Priestley, Calgary, take a hand in the laundry business.

### **ALREADY TALKING OF 1913.**

Montreal, August 14.—Already members of the Local Association are considering what they will do next year to entertain the delegates to the National Convention. All seem to feel that they will have to work hard to prevent the Montreal Convention seeming like a second fiddle to that held at Calgary.

Montrealer, "but then they don't live in the greatest city in Canada. We have some fine plants to be inspected here. We can count upon the Association Officials arranging a fine programme, and we will be poor hosts if we can not look after the entertainment end in a city like this."



To the Left is Shown the Party From the East on the Observation Car—To the Right is a Group Taken on the Steamer. The Young Lady is Miss Gordon, Daughter of John Gordon, Montreal.



# Sub-Contract System Prevents Efficiency

**Ottawa Builders are Whip-Sawing With the Sanitary and Heating Engineers to Get Them to Cut Below Their Estimates—The Result Has Been the Installation of Inferior Supplies.**

Ottawa, August 14.—Here there has been a good deal of trouble about the bulk contract, and members of the Builders' Exchange are now preparing to wage a bitter fight against this method of securing tenders for building work. The system has been working so badly of late, and it is thought there will not be a great deal of difficulty in persuading the architects that contracts for heating and plumbing work should be called for separately. Here there have not only been the regular abuses which come from the giving of a bulk contract, but also there has developed a lot of whip-sawing with the sub contractors. Indeed they have been made to pay a good part of the builder's profit.

In the past the bulk contractors, or the men who have intended to tender for the bulk contract, have called for sub contracts for plumbing and heating. These they have been able to secure for it is only lately that the Sanitary and Heating Engineers have been taking violent objection to this method of procedure. Before they regarded it as necessary.

## **Uses Lowest Tender as Lever.**

Of the sub contracts tendered to him the builder selects the lowest, and using those figures, prepares his own specifications—figuring just how cheaply he can comply with the various requirements and still make a good profit.

That is all for the time, but the contract being given, the successful tenderer begins whip-sawing. He prepared his estimates using the lowest figures for plumbing and heating which were submitted to him; but the contract once his he is not satisfied with these figures. He wants a larger profit, and to get this determines to secure better terms on his plumbing and heating work.

And here, according to the statement of some well known members of the Ottawa Builders' Exchange, is the way it is done.

## **Plays One Against Another.**

The bulk contractor, of course, knows who tendered for the plumbing work. He figured upon the lowest estimates submitted, but now he goes to one of the other tenderers—one who was nearly as cheap. To him he says, in effect: "Sorry you weren't a little lower on that contract."

"Why?" asks the Sanitary and Heating Engineer, who of course does not

know that any one was lower, and who merely understands that the sub contract has not been officially given as yet.

"Well," replies the builder, "another man is quite a bit under your figures. Couldn't you shade them? I would rather give the work to you."

Now there are some members of the trade who will not listen to such a proposal. They stand or fall by their tender. But others, unfortunately, are not so scrupulous. It is to these that the bulk contractor goes when he wants to carry on any of this whip-sawing. And it is recorded that success has attended these questionable methods—that is success for the bulk contractor. He gets the plumbing and heating work done for considerably less than he had allowed for this department in his own tender. He is, therefore, that much ahead.

## **Who Is It That Suffers?**

But how about the house owner. It can easily be seen that such a method of beating down prices is not a good thing for the Sanitary and Heating engineers, but how does it affect the householder—the man for whom the work is being carried on?

A careful consideration of the situation makes it very plain how he is affected, and events have amply proved this. The Sanitary and heating engineers, when called upon to tender, are given certain specifications with which they must comply. Upon these they do their figuring, estimating what the fixtures will cost; what the work will cost, and what profit they must have. They make their figures close, for they want to get the work.

Now there may be a little difference in the price at which dealers can get their goods—but it is very little. Workmanship too will cost them approximately the same. A great part of the difference in the tenders, therefore, will be in the amount the various men allow themselves for profit. This means, therefore, that the man quoting the lowest figure will have cut his profit exceedingly low. So will those whose tenders are within a few dollars of his. When, therefore, the builder, or bulk contractor, begins whip-sawing among these men to get them to reduce their figures still lower, he is asking them to do one of three things—to strike off their profits altogether; to do inferior work, which will enable them to make a saving in work-

manship; or to put in goods less expensive than those mentioned in the specifications.

## **Saving on Supplies.**

Now this last, it is stated, is what frequently is done. The sanitary and heating engineer will not give up all his profits. He may be willing to economize a little on workmanship; but it is on the supplies themselves, that he has a possibility of saving.

The builder, or bulk contractor, is supposed to watch that the sub-contractors put in the class of goods specified. All this work can not be left to the architect. If, therefore, the builder is willing to sacrifice the one for whom the building is being constructed, he can agree—either openly or tacitly—to the use of a little cheaper grade of material than is specified; he can pass over some careless work. He is getting lower figures for his plumbing and heating, and higher profits for himself. That is all he cares.

Such insincere work gives all sanitary and heating engineers a black eye. Here is a new bit of work installed. It does not last. Who is to blame? The bulk contractor? "Undoubtedly not," says the owner. "the plumber." And so it goes. No wonder the builders' exchange has awakened to this evil. No wonder a determined effort is to be made to prevent this connivance of a few unscrupulous builders, with a few unscrupulous—or hard driven—sanitary engineers; a connivance which works harm in the long run, to all.



## **A LEAK IN A RANGE BOILER.**

Editor Plumber and Steamfitter.—I have a leaky range boiler and wish you could tell me just how to repair it.  
P. L. C.

If the leak is along any seam, you can most probably solder it strongly and neatly enough so that it will hold. In case the leak is not near a seam but is a small hole the most thorough way would be to drain the boiler (which would have to be done in the first case also) and then ream out the hole and thread same screwing in a galvanized plug. After testing and proving the boiler tight, any projections of the plug can be sawed off even with the surface of the boiler with a hack saw. When painted or bronzed over such repairs cannot be detected.—D. C. H.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, AUGUST 15, 1912

THE OPINION of one of the delegates at the Calgary convention is worth quoting. "The one feature about it which struck me most," he declared, "was the number of smaller places represented. It impressed me as indicative of an increased interest and

**THE CALGARY CONVENTION** as such as an evidence of future success." This sums up what was undoubtedly one of the features of the convention. The attendance was both large and representative. Considering the distance which many of the delegates had to travel, the attendance was surprisingly large.

\* \* \*

There were many other features contributing to the success of the convention. The members of the Calgary association were ideal hosts. They spared neither time nor expense to make the time go pleasantly for their guests. The week spent in the Prairie City was full of interest and incident.

\* \* \*

A big share of credit is due also to the officers. President Walsh made a courteous and efficient chairman. Under his control, the sessions moved with snap and vim and there was "something doing all the time." Topics of deep importance were introduced and the discussions were spirited.

But the measure of credit due to the officers is larger than that to which their conduct of the convention alone entitles them. During the whole year, Pres. Walsh and that indefatigable worker, Sec. John Watson, the Nestor of the society, have been engaged in work which has had a direct bearing on the success of the convention. They have undertaken and carried through to completion, measures which aroused interest in members of the craft in all parts of the country. The skill of the men who have been at the helm during the past year was one of the factors in the big interest manifested at Calgary.

Plumber and Steamfitter takes this opportunity of congratulating the retiring officers on their conduct while in office. J. E. Walsh brought to the presidency dignity and a keen insight into conditions united with reasoning powers. His year's leadership has resulted in the formulation of many excellent suggestions, which, by the way, should not be allowed to pass into the realm of things forgotten." They should be followed up energetically.

Secretary John Watson worked hard and zealously,

bringing to his duties long experience in trade and association matters and a unique knowledge of society precedent and constitution. He accomplished an enormous quantity of work. It was all the more creditable in view of the fact that Mr. Watson had previously filled all executive offices and was entitled to a rest from the arduous sides of association work.

\* \* \*

The choice of new officers was an admirable one. E. J. Young has been a capable and unusually zealous vice-president. To borrow a word now much in vogue in American politics, he is progressive, a believer in sweeping reforms in trade matters. Now that the toga has been transferred to him, he can be expected to carry on the work energetically and zealously.

Harry Mahoney was the man for the vice-presidency. This hustling citizen of Guelph is one of the "old guard," an enthusiast of unquenchable ardor. He has worked for the association for many long years and when in the course of time he becomes president, can be counted upon to give a good account of himself.

James Marr will make a splendid secretary. He has all the qualifications for the office, is enthusiastic and is also a progressive when it comes to the question of trade legislation. He can be counted upon to accomplish a great deal toward the enactment of trade reforms.

\* \* \*

The past year was a memorable one in point of provincial work. Associations were formed on a permanent basis in Ontario, New Brunswick and Alberta. The coming year should see the work extended to other provinces. In fact, there is no reason why the next convention should not see the whole country organized from coast to coast.

\* \* \*

The reports submitted contained many suggestions and items of wide import. The matter of the elimination of the general contractor was touched upon very strongly and it is sincerely hoped that the coming year will see decided action taken in this respect. Crying evil as it is, the general contracting system should be stamped out.

\* \* \*

The standardization of ordinances and materials was another question which was debated and which will bulk

largely in association deliberations during the coming year. It is a big question, perhaps the biggest of all, and it need not be expected that the desired end will be achieved in one year. Legislative bodies are slow to move and it will probably take a long time to impress on the powers that be the advisability of establishing uniformity in civic and provincial sanitary and heating regulations. On account of this, it is the more necessary for the trade to start the campaign and to wage it with unabated vigor. The more insistent the campaign, the quicker will the reforms be undertaken. Stir them up! Keep on stirring.

\* \* \*

The apprentice committee submitted a very comprehensive report, dealing with the grave situation which now faces the trade as a result of the lack of men. The average master has been living during the last ten years or so in a "fool's paradise." Refusing to recognize the necessity of breaking in apprentices, they have been getting along without them as much as possible. Skilled workmen are now more hard to find than the masters care to see. What of the future? If the high standard of the trade is to be maintained, an earnest effort will have to be made to reorganize the apprenticeship problem.

The committee made a number of valuable suggestions which should be given earnest thought by all members of the trade.



#### CONVENTIONALITIES.

Now for another good year.

\* \* \*

The manufacturers' exhibit was a new feature.

\* \* \*

The Calgary members entertained the delegates in princely style.

\* \* \*

Bill Henrich is right when he affirms that Calgary is "one classy burg."

\* \* \*

Guelph did herself proud. The Royal City boasted four firms and all four were represented.

\* \* \*

Bob Yeomans of Toronto was a new figure at the convention. He will be found at all of them hereafter.

\* \* \*

As one delegate put it Jimmy Walsh is "sure smooth." He speaks fluently and makes an ideal chairman.

\* \* \*

Prices just at present are much like elevators to the man who wants to get down in a hurry. Everything is "going up."

\* \* \*

The West is demanding more rope, not to carry out the suggestion of the old adage, but to make sure of getting the crop harvested.

\* \* \*

More delegates should follow the example of John Gordon. The presence of members of the fair sex at conventions is an added attraction.

A business letter, it has been said, should deal with but one subject. It goes without saying that it should be legible—yet some business letters aren't.

\* \* \*

Every time we get a written letter, we raise a prayer of Thanksgiving for the man who invented the typewriter, and who made unreadable scrawls unpopular.

\* \* \*

To speak mildly and conservatively, business at the present time is good. No wonder that Canadian business men are just chockful of confidence and optimism.

\* \* \*

J. E. Farrell could not attend because he was away on the "trip of trips." It would take a pressing previous engagement to keep J. E. away from a convention.

\* \* \*

To speak metaphorically, a steady blow from the bellows of energy and initiative will fan the dying embers of sluggish business into the crackling flame of activity.

\* \* \*

Ontario, New Brunswick and Alberta are organized. Like to hear from Quebec, Manitoba and Saskatchewan soon. All the provinces should be organized within a year.

\* \* \*

Harry Mahoney may find himself mayor of Guelph and President of the C.S. of S. & H.E.O. at the same time. Question? How much time will he have to devote to business in that case?

\* \* \*

Apropos of the western situation, a correspondent rises to enquire: Why should business interests stand idly by while the wings of prosperity are being clipped by the scissors of a car shortage?



#### PROSPERITY ASSURED.

THE PROSPERITY of the country depends in no small degree on the Western crops. The sequel of good crops is the free circulation of money in the West and that condition is soon communicated to the east.

It seems reasonably assured that the crop this year will be larger than ever before. There have been adverse conditions and damage has been done in some sections by hail storms. The yield will be quite up to the average, however. Even the most conservative admit that, while men of a more enthusiastic turn of mind are predicting better things. Taken in conjunction with the immense increase in acreage, even an average yield would mean a much larger output than ever before. The weather at present is favorable, and there is little danger of anything cropping up to upset present calculations.

The crop is safe, and prosperity for the whole country is assured.



#### POINTED EDITORIALS.

Certainly there is nothing slow about metals these days.

\* \* \*

A new and higher list has been struck for shot. Paying the shot," will now come high.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## A QUICKLY MADE PIPE BENDER.

Editor Plumber and Steamfitter.—I wish that you would show some easy and quick way to make a good pipe

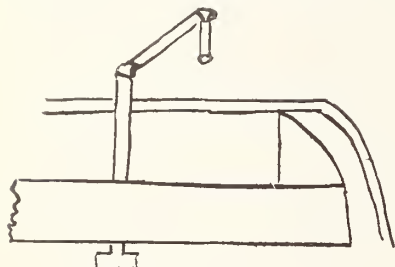


Figure 1.

bender that can be fastened on any old bench.

J. C. S.

We show, in Figures 1 and 2, an arrangement which can be made from a piece of 4x4 inch timber, three pieces of inch pipe and two 1-inch ells, together with a couple of one-inch fittings below

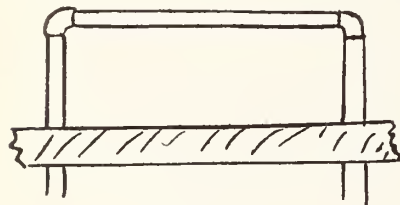


Figure 2.

the bench in case you do not use plates fastened to bench with screws to screw the upright pipes on bench. The two drawings explain themselves. Chamber off the 4x4 rounding as shown in Figure 1. This arrangement can be easily made by most any helper in a very short time and will work very well where extra accurate work is not demanded.—D. C. H.

## DECORATING THE BATH TUB.

Editor Plumber and Steamfitter.—I put two coats of enamel on a new bath tub and it still looked "punk." How can I do a good job on these new tubs and have it look right every time?

B. C. J.

You used a body of paint on the tub before the enamel is applied. The right

way to do this job is to set the tub, then, last of all, rub the tub down with sandpaper until it is fairly smooth, apply a coat of white lead paint which has had some zinc added to it in order to give more body. If desired, some drier can be added to make a quicker job. Two coats of the white lead ought to give body enough so that, when thoroughly hard and dry, the enamel can be applied. Two coats of enamel will complete the job. The tub will then be white and have a beautiful gloss rivaling that of the white enamel inside.

—D. C. H.

## LIME IN WATER FRONT—HOW REMOVED.

Editor Plumber and Steamfitter.—Sometimes it is very hard to get the lime loose from the inside of a waterfront. No amount of hammering will do it. Is there any other remedy than can be used?

A. J. G.

When the waterfront is taken off it may be hammered reasonably hard to jar loose any lime that may come off. Then soak the waterfront in a solution of muriatic acid for three or four hours. When the waterfront is taken out of the acid it should be thoroughly washed in water to remove all acid and sediment.

—D. C. H.

## POOR WIPING SOLDER.

Editor Plumber and Steamfitter.—I do not seem to be able to get a good quality of wiping solder no matter how carefully the boys make it up. Can you give any suggestion?

Worried Plumber.

Perhaps your solder contains zinc or some other things which spoil the wiping solder. If the plumbers all the time dip the brass work in the solder you can be sure that that is one reason for your trouble.—D. C. H.

## TOO MUCH HOT WATER.

Editor Plumber and Steamfitter.—A range boiler that I am to fix supplies

too much hot water. Will you tell me how I can reduce the heating capacity and not spoil the job. Am sending sketch.

John Spellman.

Our correspondent has forwarded sketch shown in Figure 3. He can allow

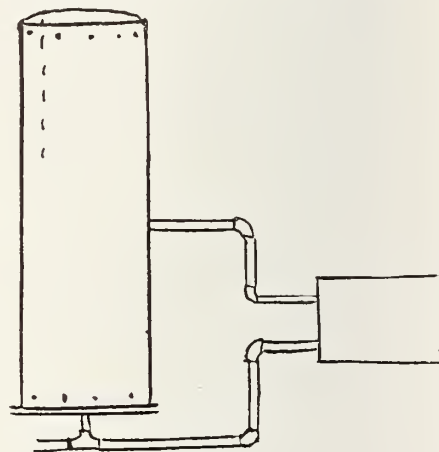


Figure 3.

the connections to remain the same as shown and merely cover the waterfront with some kind of fire clay; or he can

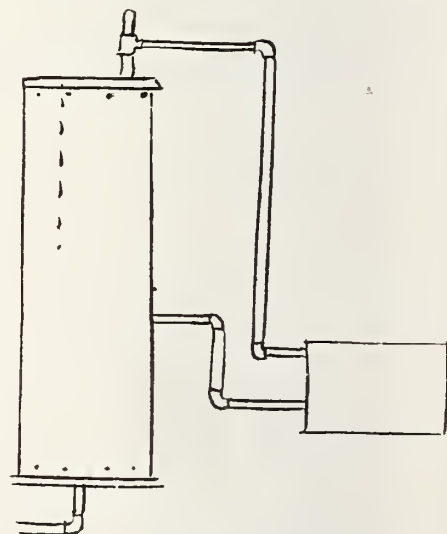


Figure 4.

change the piping as we show in Figure 4 which will effectually cut down the amount of hot water as desired.—D.C.H.

### A CEMENT USED BY GAS FITTERS.

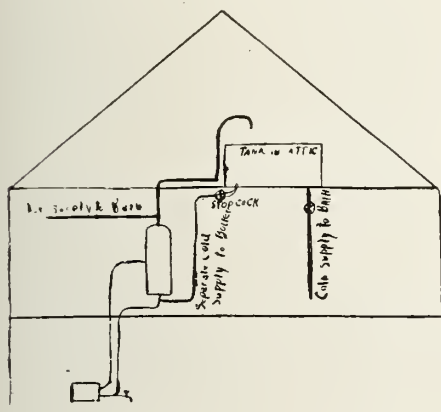
Editor Plumber and Steamfitter.—Can you give me the receipt for the red cement used by gas fitters?

P. J. Wetherby.

To make it in any amount divide mixtures as follows: One part wax; three parts venetian red and four and a half parts of rosin. This will give you a cement that will give you good satisfactory results for what needed.—D.C.H.

### PUTTING IN COLD SUPPLY.

Editor Plumber and Steamfitter.—I would esteem it a great favor if you would give me your opinion on the above sketch of hot water service. I may say that I departed from the usual Canadian style of putting in the cold supply at the top of the boiler as we had neither any 3/4-inch connections or stop cock at hand and the whole argument is about the cold supply to the boiler. Will it work as well going in at the bottom circulating pipe as it would going in at the top of the boiler and extended down to within



4 or 6 inches off the bottom? My opinion is that the above sketch will work alright.

R. McA.

We have looked over the sketch enclosed and read the description with great interest. Connected as you have shown we fail to understand why the job should not work, and believe that is might be given a chance to be tried out on its merits before changing it to the top connection.—D.C.H.

### HOW MUCH COIL FOR TANK.

Editor Plumber and Steamfitter.—I have a 150 gallon tank to be heated from a steam coil. How big should the coil be?

Reader.

It depends upon how rapidly the hot water is to be used. If quite fast we should say the coil should contain some 30 square feet of heating surface. However, if the water is drawn upon only a

few times each day probably half that amount, a only 15 sq. foot would answer every purpose.—D. C. H.

### TO REMOVE STAINS.

Editor Plumber and Steamfitter.—Will you kindly give me a receipt that will remove stains and scratches from marble? Being a subscriber of the Plumber and Steamfitter, am interested.

R. W. C.

1. Cover the stains with a pliable mixture of common clay and benzine.

2. Mix in boiling water, 1 1/2 parts of potash, 1 1/2 parts of soft soap and 3 parts of fullers earth. Cover any grease spots with this mixture and let it stand for 24 hours.

3. About the only way to remove rust stains in marble is to rub them out by wearing down the surface with pumice stone. The marble can again be polished

by using fine whiting rubbed on with a piece of soft leather or better still, a cork.

4. We know of no way of taking out the scratches other than rubbing down the marble as above described.—D.C.H.

### CLEANING CLOSET BOWLS.

Editor Plumber and Steamfitter.—Several closet bowls of my customers have inside a hard coating which will not come off easily. How can it be best removed?

H. C. Bixby.

Try first a good strong solution of lye or potash, letting same stand in the bowl a few hours. If this will not effect a cure, use a solution of about four parts water to one part sulphuric acid, allowing same to stand two or three hours in the bowl.—D.C.H.

## Where Penalty Clause Had to be Broken

Five Dollars a Day Was to be Paid if the Work Was Not Completed by the Middle of August, But Unfinished Brick Laying Rendered a Reprieve Necessary—Building Stone Exceedingly Scarce, Holding Back all the Operations.

Montreal, August 13.—Inability to finish work which he had bound himself to complete by the middle of August has been causing a local sanitary engineer a good deal of worry. He has reached a settlement, but the facts of the case may be of interest to others, so they are here given.

The sanitary engineer was unable to complete his work through no fault of his own. Let that fact be clearly understood. He had agreed to have the heating and plumbing work finished by the middle of the month. He had been so sure that he could do this that he bound himself to pay \$5.00 a day for every day over this time which he required. But the building work, generally, was not advanced as it should have been. Instead of being completed, the brick work has not yet risen much beyond the first storey. Roughing in, therefore, has only commenced.

#### Bricklayer at Fault.

What was the sanitary engineer to do. He could not complete work in a house which was not complete, yet he faced that \$5.00 a day forfeit clause.

When the matter was taken up with the architect, however, it developed that the brick layer was to have completed his part of the work by July 17th. As has been said, he is not yet nearly finished. The decision, therefore, was that the Sanitary Engineer should have as much extra time as the brick laying

took, before his forfeit clause came into force; the brick layers being the ones who pay the forfeit for the present delay.

But although the \$5.00 a day refund has been thus satisfactorily arranged, the situation is yet somewhat serious. This building is but one of many which should be completed now but which are not even well advanced. The cause is said to be scarcity of building stone. Enough has not been brought to market to meet the exceptional demand.

Brick too is scarce, though not so scarce as the stone.

#### Cause Future Trouble.

The lateness of these buildings is causing annoyance now, and will cause greater annoyance in a month's time. At present labor is to be secured. In a short time men will be comparatively scarce. New York will be demanding attention, and the return of people from the country will have started a call for repair work. So there will be just the kind of fall rush which the trade has been hoping to avoid.

But, as has been sagely said, there is no use crying over spilled milk. The local members are not deploring the state of affairs, therefore, but are making arrangements to get their new work finished just as quickly as possible; and to get the men who will enable them to cope with the fall rush.



# Methods of Sewage Disposal

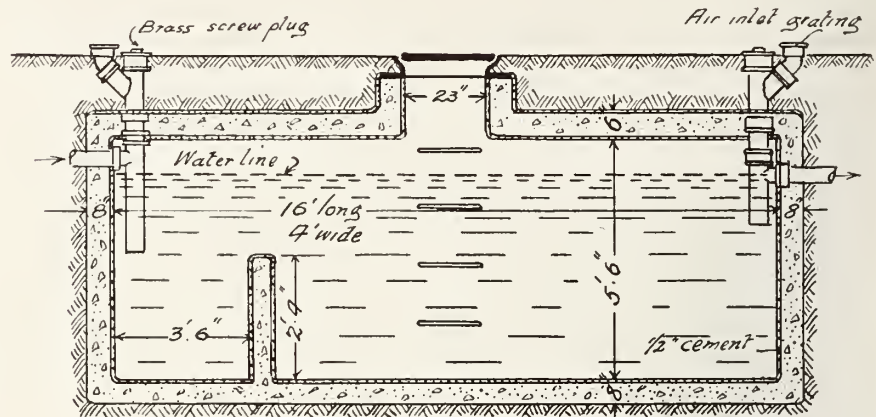
By Chas. W. Chandler.

An interesting example of sewage purification, involving the use of a relatively small size septic tank, with sub-surface aeration, is obtainable in the plant laid out for the Federal building of Biloxi, Miss. It was designed in the office of the chief mechanical and electrical engineer of the supervising architect's office, Treasury Department, Washington. The accompanying illustrations will outline its general features and some of the details, while for points involved in proportioning the system, one is referred to the series of articles already presented in these columns.

Briefly described, the sewage leaves the building by two cast iron soil pipe lines uniting and entering the septic tank as one pipe, as indicated. The septic tank, of concrete construction, is simple in design, having but two chambers formed by a submerged cross baffle wall, calculated to arrest foreign matter and insoluble material and to minimize the agitation of the liquor, although, of course, the inflow pipe is made to dip below the regular water level. The detail section drawing shows

the air inlet, with its grating to provide for the air supply passing through the drainage lines to the vent stack lines of the building. The outflow is

face agitation, which has been held to be an important factor toward favoring the proper degree of activity of the anaerobic bacteria, which work to break



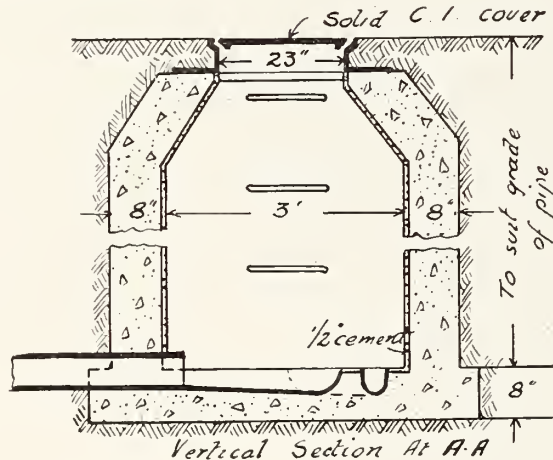
Vertical section of septic tank.

similarly arranged by means of the tee, shown, to maintain the water level at the desired point, and to keep the outflow submerged and thus minimize sur-

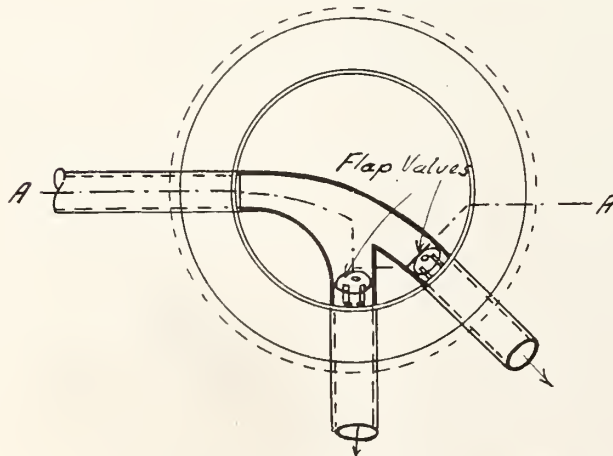
down the relatively complex compounds of the sewage and to bring it to the liquid form, although not necessarily purified.

The scheme for aeration, in other words the arrangements for bringing air in contact with the effluent of the tank and thus to favor the activity of the aerobic bacteria, bringing about purification, is provided for in a double line of underground open-joint terra cotta pipe. The liquid from the septic tank reaches these sub-surface drainage lines through a 5-in. cast iron pipe, delivering into a catch basin where entrance is had to these two lines.

A vertical section and plan of details of the catch-basin are shown. There, if desired, the two sub-surface lines may be supplied alternately, as it is generally regarded as desirable to give such purification or oxidizing arrangements a period of rest, so that they are never in the condition of getting clogged, and therefore of preventing the free access of air. It will be noted that these purifying lines are arranged in each case with an air inlet, and that the terra cotta line, is laid as stated in open joints, in a bed of oyster shells, abounding in the vicinity and affording good material for filling, and at the same time giving a maximum amount of air space and large wetting surfaces for aeration. The detail shows the earth back filling of the truck work, and the use of 2-in. of hay or straw to prevent the earth falling through the oyster shells. These terra cotta lines are laid approximately 3 feet 6 inches below grade near the beginning, and are graded 1/2 inch in 10 ft.



Vertical Section At A-A



Details of the catch basin.

# Soil Pipe Sells at 75 Cents a Foot

Remarkable Price Paid By a Western Dealer and at That the Seller Was Displeased—What Has Caused the Scarcity of the Pipe.

"Never mind the expense"—which is a polite way of turning a somewhat common expression—seems to apply particularly to soil pipe just now. Price, indeed, has become a very secondary consideration, as instance the following true story, told by a man interested in soil pipe, who has just returned from the West.

This man was in Calgary at the time the Canadian Society of Sanitary and Heating Engineers was meeting there, and naturally became acquainted with a number of delegates. Among the men he met was one from a place not a thousand miles distant from Calgary. This man was congratulating himself that he had a good supply of soil pipe. "It doesn't much matter to me what the shortage is," he remarked. "I have got more than 1,000 feet, and I'm going to keep it. That will be enough for my requirements. If I have some over a little later on I may sell, but I'm not going to take chances of running short now."

## A Prohibitive Price.

Later, another delegate approached the dealer who was rejoicing in a good supply of soil pipe. "What will you sell me some for?" he asked.

"I'm not selling," remarked the fortunate one.

"Oh, name a figure," he was urged.

Now here is where the fortunate dealer's good fortune forsook him. He set a price. A price which he thought would be prohibitive. "Well," he remarked. "I'll take 75c a foot."

"I'll take it at the price," said the eager one; and the fortunate dealer, being game, had nothing to do but sell 1,000 feet of his cherished soil pipe.

Think of it, 75c for soil pipe, and it can be bought in Montreal and Toronto for about 20c. But the soil pipe is badly needed. The dealer who paid this big price probably figured that it would only make a few hundred dollars difference on the price of some work he had to do. He preferred to stand this reduction in his profits rather than endure a delay which would perhaps necessitate his paying a forfeit.

## Why the Shortage?

Dealers are wondering what it is that is making soil pipe so scarce. Why, they are asking, can not the manufacturers produce enough pipe to meet the demand.

To find out just why the writer has made a good many inquiries, which have yielded some enlightening information.

Perhaps no one reason can be given as entirely responsible for the present situation. But one thing is sure, circumstances have arisen this year, to affect conditions, which may not come again for one hundred years—perhaps never.

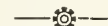
## The English Pipe.

To begin with the dockers' strike has interfered with the importation of soil pipe from England. Note the result! A good deal of the pipe needed in the Maritime provinces has been brought from England. The source of supply is interfered with this season, and therefore the entire demand falls upon the Canadian manufacturer.

Moreover, the United States mills have, in the past, been sending a good deal of soil pipe into Canada. But this year conditions have been somewhat demoralized in the States. A presidential campaign always does have a demoralizing effect—much more when a young, but lusty, Bull Moose Party thrusts its antlers on to the scene. So United States soil pipe is conspicuous, largely by reason of its absence. Result—a smaller outside supply, and a greater call upon the Canadian manufacturer.

These were conditions which the local makers could hardly expect. The growing Canadian demand they did anticipate, and this they aimed to meet, but the shrinkage in the supply available to meet the enlarged demand was something unlooked for.

It is said, on some sides, that the manufacturers have purposely allowed their stock of some lines to fall low; because they have long contracts to fill, at prices so low that every sale means a loss, in view of the present price of metal. Perhaps there is something in this. It would appear, however, that the other reason—the growing demand, and the unexpectedly reduced outside supply has had more to do with the present situation.

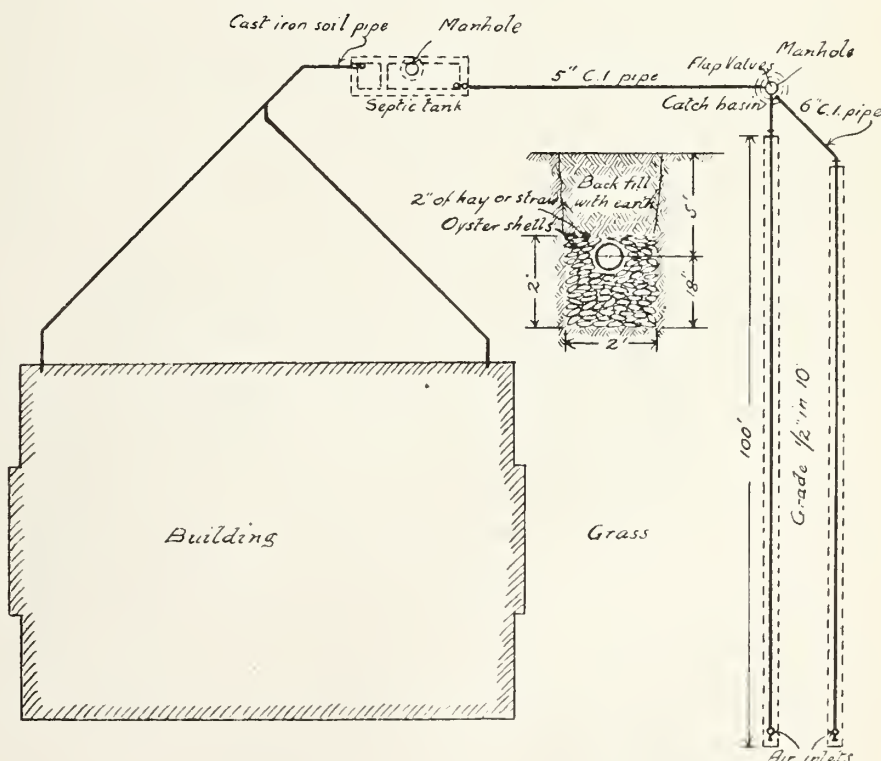


## STARTING JOINTS.

Editor Plumber and Steamfitter.—How can I fix things so that I can start, easily, a number of rusty old joints on a steam main?

F. E. J.

If they are worth taking apart you might heat them, which is the practice many times followed by fitters.—D. C.H.



Sewage disposal system of Biloxi Federal building.



# Complete Course of Sheet Metal Work

By L. W. KOSER

Prob. 8 shows the method of developing the pattern for a hip bath.

Draw one-half the plan and space same off.

Then draw the cone as shown by the lines R. 1. and 7. Then draw the curved line A.D. representing the top of the bath, and the line B, C, the bottom.

Drop lines from the different points on Fig. 1 until they touch the base line 1 7. Then carry them towards the centre until they touch the curved line A D. Then parallel to the base line until they touch the line 7 R.

The pattern is then developed the same as prob. 5, the only difference being that the point 1, is carried to the line 7, the point 2 to the lines 6, etc., until all the points are intersected. But

if the pattern had been laid out on the left side instead of the right then the different points would have been carried into like numbers. We make this change to impress the principle of the pattern upon such students as are apt to follow the instructions in too mechanical a manner.

Prob. 9 shows the method of developing the pattern for a conical flashing to fit around a pipe and against one side of an inclined surface.

The flashing being shown by A B C D, Fig. 1. The dotted lines being drawn to get the full measurement of the cone.

At any convenient place lay off one-half the plan as Fig. 2 and draw the full size cone as R P 1, Fig. 3, and the roof line M P.

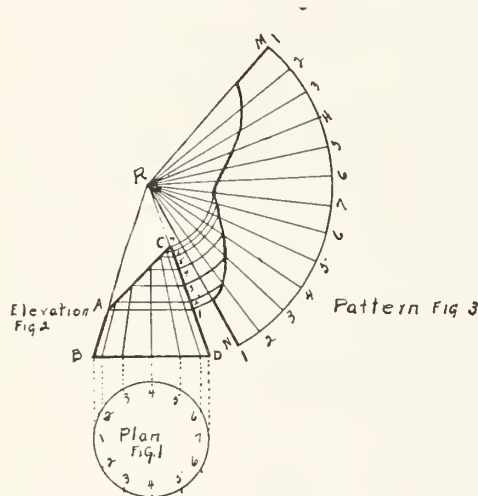
Carry the points on Fig. 1 to the line L p, then into the centre R. With R as centre, and R P as radius describe the arc X X and lay off the stretchout, draw lines into the centre R. from each one of the points on the line X X.

Where the lines from Fig. 1 meet the inclined line M P, carry horizontal lines to the side R P.

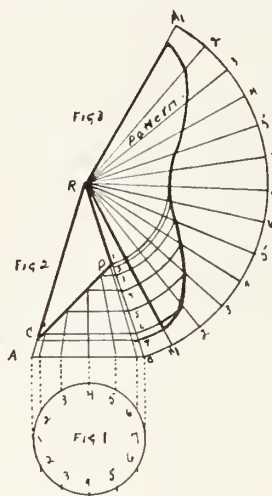
Then with R as a centre swing a line from each of these points and cut the measurement line having the corresponding position.

If it is desired to have the seam on the narrow side, then develop the pattern on the left side of the elevation, and as previously explained this will bring like numbers into contact.

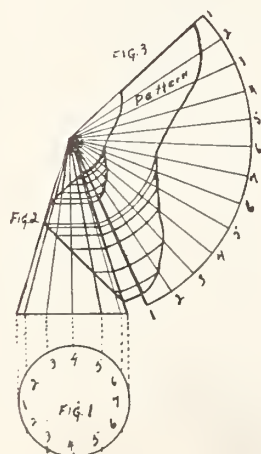
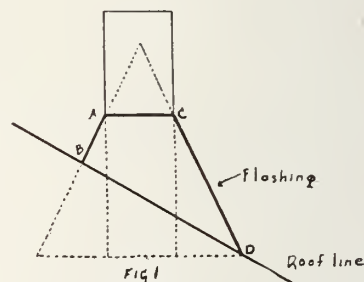
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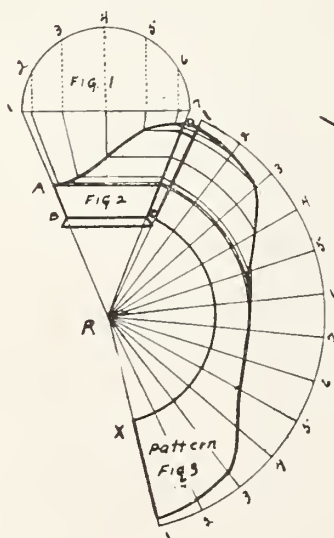
PROBLEM No. 5



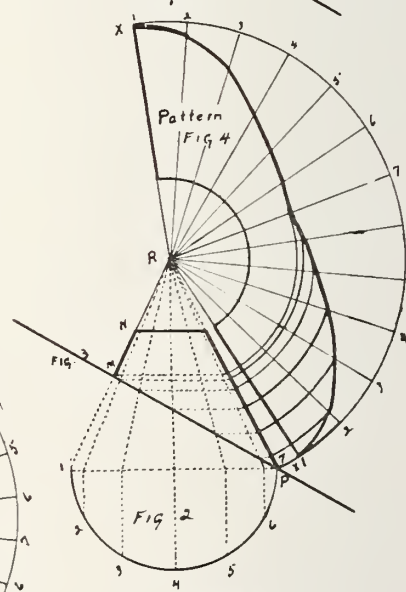
PROBLEM No. 6



PROBLEM No. 7



PROBLEM No. 8



PROBLEM No. 9



# Tips for Helpers---By "Phoenix"

## CHAPTER 4.

Before you have been many months at work in the shop you will discover that all jobs of heating or plumbing, if any size, are guided by a set of plans or prints generally called the "blue prints." Now, I want to state right here that I do not want you to form any idea as to the correctness of any jobs working from the plans I am showing you in this chapter. They are shown for the express purpose of having you attempt to find out where said plans could be bettered. The plan shown in Figure 1 is a one pipe steam heating job; while that of Figure 2 is evidently intended for a hot water job. In each of these cases you will observe, if you have had the chance of looking at many blue prints of jobs, that the artist has endeavored to save pipe. He hasn't taken into consideration how the walls stand, how much work it would take to get a pipe through the wall as shown. Neither has he considered that (as for instance in Figure 1) the job might all be put up on one run of pipe and with less pipe than he, in his endeavor to save, has used. Show either of these plans to a first-class steamfitter who has had the experience of ten or fifteen years and he would laugh at them. For instance, take Figure 2 which is supposed to be a first-class hot water heating job. Evidently the artist knew that most any ignoramus could put one or two radiators on a pipe line and break even on the chances of the radiators working. So he went and did just

that. You can't help but notice that there are three sets of mains and returns. Perhaps he did not know enough to figure the right size of main for the

much worse job and I'm trusting that before this series is over you'll be able to do one much better. These plans are shown to enable you to see the kind of

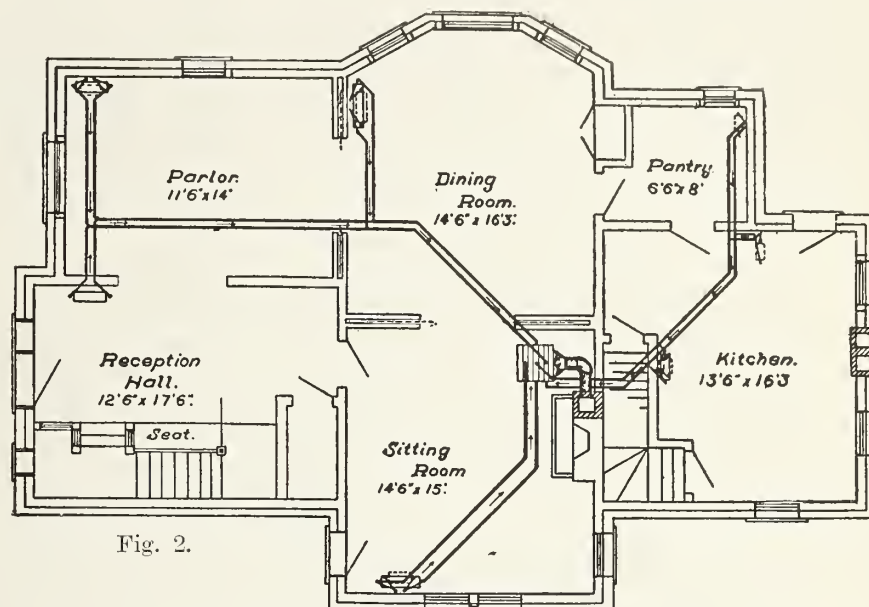


Fig. 2.

entire job, or did not dare risk it; for you can see, quite plainly that he did not do it; but you can find many a hot water fitter who can lay out that job with only one main and no special return at all and have it work all to the mustard. Do it and with less pipe than is shown in Figure 2. You can study this out for yourself. Draw some blank plans and lay out a few jobs in different ways for yourself. You may not be an artist, but you sure could not do a

work **not to do**. It is a sample of the work suggested by some of the mail order catalogue propositions—work that is claimed "anybody" can do and I must confess that it looks the part, for surely no steamfitter would be guilty of anything similar, and you, my boy, are putting in four years' hard work endeavoring to learn how to do the work right. So start right here and begin by learning some of the things to avoid. Don't run two pipes to do a certain amount of work when one pipe slightly larger and run in a slightly different direction or manner will do the work easier and with less pipe. Be practical and scientific enough to know how to put six or eight (or twenty, if the occasion so demands) radiators on one pipe line and make them all work and not have to run separate pipes to nearly every radiator as clearly is the case in certain instances in both the plans here shown. You might fool somebody who didn't know how such things were done, but you wouldn't fool a practical steamfitter, or even a well educated citizen who knew anything about heating, for many moments, let me tell you.

When the 45 degree fittings first began to appear in the trade, everybody got a fit for cutting off distances right away. All the square turns must be cut out forthwith. Now, I do not say to

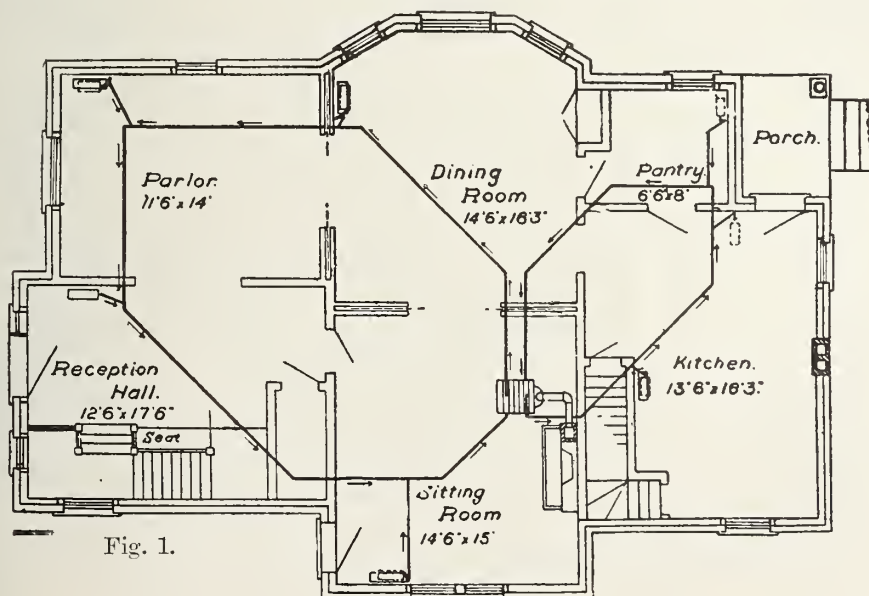


Fig. 1.



make a right angle turn always, but I do say that it is not the wisest proceeding to make them on two lines if the two can be combined into one—with less pipe though, perhaps, a size larger. On a small job with only a matter of six to twelve radiators; and with a boiler that is anywhere from 25 to 50 per cent. larger than the actual amount of radiation calls for a matter of four to eight but a pipe saved is not going to count up over a million dollars in coal saved or very much on the extra quickness with which the job heats up. I have seen it tried both ways too many times to be fooled and so will you before you get the trade all learned. Don't get the idea that I am forever against the 45 degree fittings for I am not. They are of use and good when used with horse sense and discretion but, like every other good

thing, they can be used to a disadvantage. Take 25 blue prints that were made from plans actually gotten out by men who are steamfitters (not artists or architects) and on the steam or hot water mains count up the number of 45 degree turns made in the main, horizontal runs. You'll find a few, but not many. They may use long sweep fittings but the 45 degree work will be on the branches and risers unless I am greatly mistaken and that they do work differently than most folks.

So you can see that besides having many things to learn, there are also many things of which to beware and I have chosen in the case, the chance of illustrating to you a few of the ways of not doing the work you have chosen for your business in life.

40 cents an hour and the employment of none but union men were refused by the master plumbers.

#### Buys Out Partner.

A recent visitor at the office of Plumber and Steamfitter, was A. E. Law, of Leamington, Ont. Mr. Law was formerly in partnership with M. Killop but last month he took over the business by himself, his partner remaining in his employ. Mr. Law was in the Queen City on a trip, part business and part pleasure.

#### A Large Total.

South Vancouver, Aug. 3.—Plumbing permits issued during the month ending July 31 totalled 130 according to the report of Plumbing Inspector Thuresson. One hundred septic tanks were approved and 68 were order to be altered. Cash received to date totals \$4,300, of which \$338.60 was received during July. A balance of \$44.45 still remains to be paid.

#### A Busy Time Ahead.

Toronto, Ont.—About 1,500 sanitary plumbing conveniences have been installed since the order of the Board of Health went into effect, in a total of over 13,000 places reported. Of the 11,000 cases or more that remain, about fifty per cent, are waiting on the plumbers. The work has been either begun or the order has been given that it be done, but owing to the rush which the order has occasioned the plumbers of the city were overwhelmed. One of them is said to have orders enough ahead for two years.

About forty per cent of those who have been ordered to install the modern system of sanitation plead poverty as an excuse for not being able to do so, and at present, in view of the pressure upon the plumbers, these people will not be interfered with. The attention of the health department is at present chiefly confined to the more central districts of the city south of the C.P.R.

#### Installation by City Approved.

Dr. Hastings reports that the city solicitor approves of the scheme to secure legislation allowing the city to install sanitary plumbing in houses where the financial strain of doing so by private effort would be serious, and charging expense up over a period of years as a local improvement.

"I have had a large number of letters, some of them really pathetic," said Dr. Hastings this morning. "These people want to obey the law—they acknowledge the seriousness of the necessity, but they are simply unable to afford it. The local improvement proposed plan would offer a positive blessing to such people.

## Plumbing and Heating Markets

### MONTREAL.

Montreal, August 15.—A number of price changes make the market interesting this week. Most of the changes—indeed all—are in an upward direction. Since metals began to soar, changes usually have been upward.

Iron pipe has shown perhaps the greatest rise, the present net quotations being:

Black		Galvanized
\$ 1.88	1/4 and 3/8 inches	\$ 2.65
\$ 2.45	1/2 inch	\$ 3.35
\$ 2.90	3/4 inch	\$ 4.00
\$ 4.10	1 inch	\$ 5.70
\$ 5.60	1 1/4 inch	\$ 7.85
\$ 6.75	1 1/2 inch	\$ 9.40
\$ 8.40	2 inch	\$12.00
\$13.50	2 1/2 inch	\$19.20
\$17.70	3 inch	\$25.00
\$23.60	3 1/2 inch	\$33.15
\$26.90	4 inch	\$37.65

### Soil Pipe Steady.

Soil pipe, contrary to expectations, has not advanced further. But this is not of very great importance. The thing with soil pipe is to get it. There is a great scarcity—a scarcity which promises to become more serious as summer merges into fall. As far as prices go a change is practically certain to come, and of course the change will be upward.

In black sheet iron there have been new prices fixed—these, too, being advances on the old. The new figures are: 10 to 12 gauge..... \$2.40 14 to 16 ..... \$2.15 18 to 20 ..... \$2.20 22 to 24 ..... \$2.25 26 ..... \$2.35 28 ..... \$2.45

### Brass Valves up, Too.

Then in brass valves there is noted an advance, this being approximately

10 per cent. Standard compression have been advanced from 70 per cent. discount to 65 per cent. discount; while Jenkins valves, which have been quoted at 52 1/2 per cent. off, are now listed at 45 per cent. off.

Generally, business is exceedingly good. For boilers and radiators orders are coming in rapidly. There is absolutely no doubt that the trade in these lines will be large. The question is, will the supply be sufficient to meet the demand? Last year, it will be remembered, there was a scarcity of radiators. Many dealers are bearing this in mind now, and are ordering supplies to cover their fall and winter requirements. Enamelware, too, is being called for. Here, too, there has been something of a scarcity in the past, and requirements are being covered.



## Gossip of the Trade

### In New Premises.

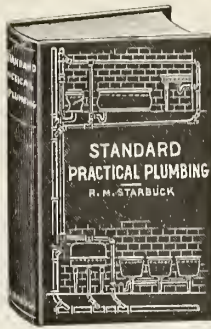
New Westminster, B.C.—The Modern Heating & Plumbing Co., Messrs Ratzman, proprietors, have moved into their new premises on Seventh avenue near Sixth street. This building has recently been erected by them.

### A Young Sanitary Engineer.

Geo. W. Richardson, 195 Adelaide street, west., Toronto, is very proud over the advent of a bouncing son and heir. Richardson, junior, arrived at 4 p.m. on Wednesday, August 14, and is a fine, healthy boy.

### Went on Strike.

Brantford, Ont., Aug. 1.—The journeymen plumbers went out on strike here this morning. Their demands for



A WANTABLE BOOK

## Standard Practical Plumbing

By R. M. Starbuck

347 SPECIALLY MADE ILLUSTRATIONS

**PRICE \$3.00**

"Standard Practical Plumbing" is indispensable to the Master Plumber, the Journeyman Plumber, and the Apprentice Plumber. As the book is specially strong in the exhaustive treatment of the skilled work of the plumber, it commends itself at once to every one working in any branch of the plumbing trade. Send for it to-day.

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**MACLEAN PUBLISHING COMPANY**

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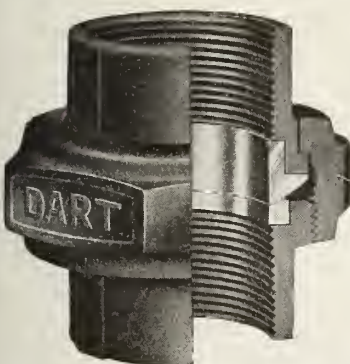


## UNIONS

**Make Connections Quickly Whether Pipes are in or out of Line.**

Use this joint when connecting pipes—it simply cannot leak and cause trouble.

The Dart is strong and durable. Will make tight joints time after time without the slightest damage to its long life.



The Dart is sold under a **guarantee** that we will replace it **two for one** if any should not be as we claim.

Sold by Jobbers Everywhere

**Dart Union Co.**

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TORONTO - ONTARIO

## Make a Practice of SMOKE TESTING!

Leaks can be very easily detected if you use

## The "THOMPSON" SMOKE MACHINE

It pays to make a most rigid test before leaving the job as finished.

This machine is not an experiment, but a practical, successful article, built of the very best materials, and will last long enough to cover its cost many times over.

It is so light that it can be easily carried by your helper.



Write for descriptive booklet entitled "The Smoke Test" or "How to test plumbing."

**The  
James Morrison Brass  
Mfg. Co., Limited**

93-97 Adelaide St. W.

-:-

Toronto



## Condensed or "Want" Ads.

### FOR SALE

FOR SALE—ONE NO. 6 OXFORD HOT water boiler, second hand, \$50.00. T. A. Cowan, Brantford, Ont. (18)

FOR SALE—ONE NO. 18 TAYLOR FORBES Western steam boiler. Gross rating 1,000 square feet. In good condition. Used three seasons. \$90.00. T. A. Cowan, Brantford, Canada. (18)

FOR SALE — FIRST-CLASS PLUMBING and tinsmithing business in a booming town of about 2,000, the only one within eleven miles. First-class farming trade. Unfinished contracts turned over to purchaser. Owner going west. For particulars, apply to Box 84, Durham, Ontario. (23)

FOR SALE—IN LIVE WESTERN TOWN—good plumbing and steamfitting business, with about \$1,500.00 stock; several good contracts on hand would be turned over to purchaser; owner has good reasons for selling. Terms made to suit purchaser. Apply Box 687, Plumber & Steamfitter, Toronto. (17)

### PRICE TICKETS

PRICE TICKETS FOR WINDOW SHOW goods. Black lettering on white card marked 25c, 50c, 75c, \$1, \$1.25, \$1.50, \$1.75, \$2, \$2.50, \$3, \$3.50, \$5. Dozen in set, per set 25 cents post-paid. Technical Book Dept., 143 University Ave., Toronto. (tf)

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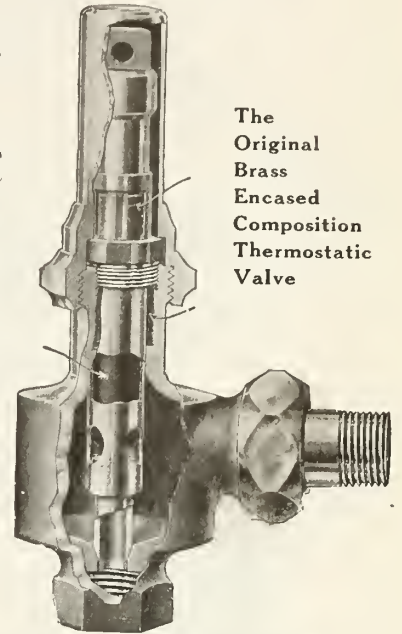
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The advantages offered by this valve are so marked as to render other types of thermostatic traps practically obsolete. A strong statement, certainly, but a glance at the following details of construction is convincing:

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See Sweet's Index, Pages 1139, 1140, 1141



## "WORLD-GOETZE" NO. 2 GASKETS

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In these gaskets are combined all the strength and elasticity of copper with the heat resistance and "pack-ability" of asbestos. They make positively and permanently tight joints in flanged piping where nothing else will—where the best of other gaskets fail.

Why not try them on a few of your most troublesome joints? Put them in the very places where the best of other gaskets have failed and be guided by the result in your future purchases of gaskets.

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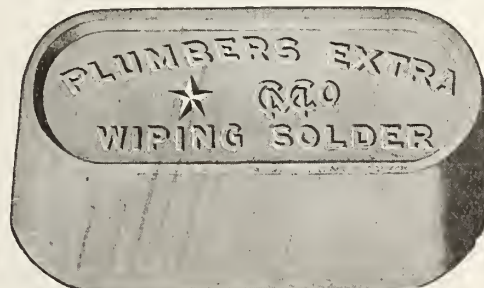
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No changing of Dies or Bushings.



**"WARREN" DIE STOCK**  
(Non receding dies—adjustable.)  
Each stock cuts two sizes. Made in four sizes.

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Each die stock contains one set of dies which can be used to cut four different threads—a twist of the wrist sets the size. The "BEAVER" requires less keep-up expense, as it eliminates the buying of three die sets. One Beaver set will last as long as four ordinary ones and give better service. Get our prices.

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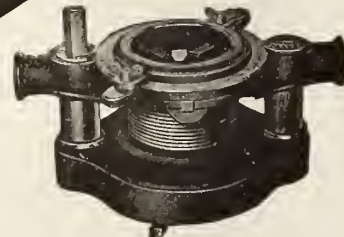
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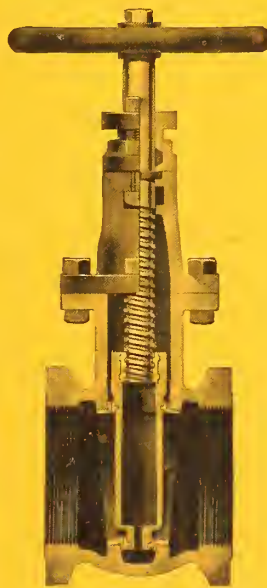


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For lasting satisfaction try the GALT line of Compression and Fuller work, Traps, Supplies, Combination Waste and Overflows, etc. It shows the result of good material, good workmanship; is graceful in design and pleasing in appearance.

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Vol. VI.

Publication Office : TORONTO, SEPT. 2, 1912


No. 19



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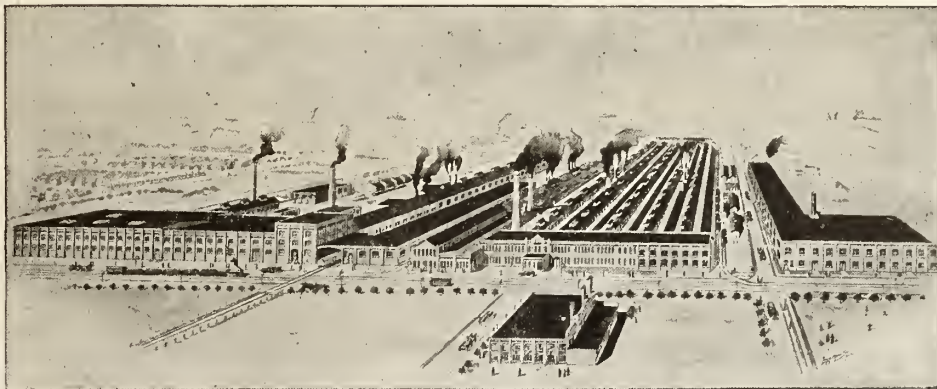
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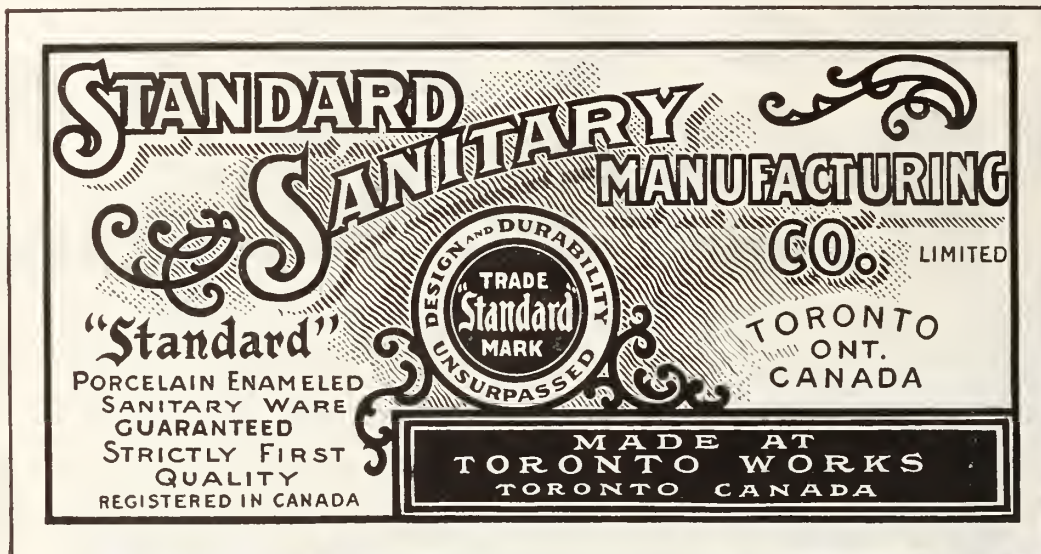




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## A Boiler That Will Increase Your TRADE

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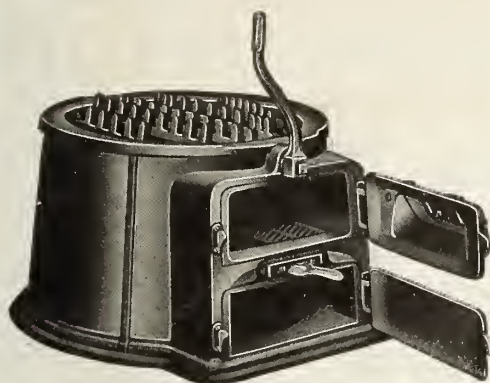
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

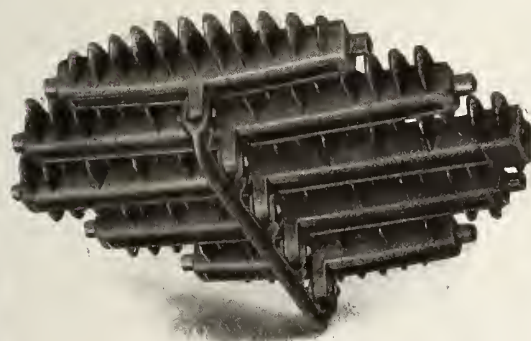
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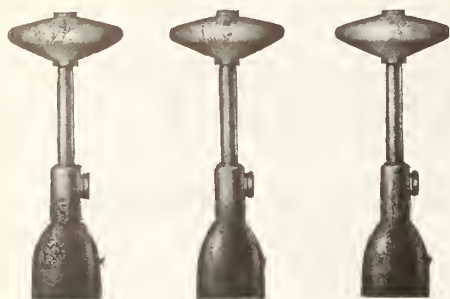
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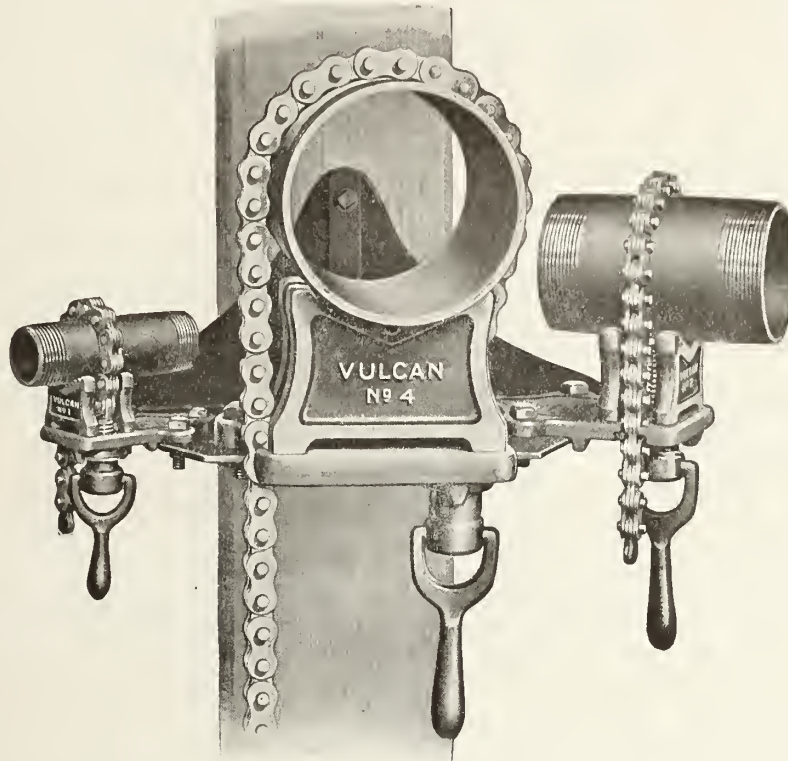
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Made in 3 sizes:

No. 1 Capacity $\frac{1}{8}$ inch to 2 inch	No. 4 Capacity $\frac{3}{4}$ inch to 8 inch
No. 2 Capacity $\frac{1}{4}$ inch to 4 inch	Every tool absolutely guaranteed.

Buy From Your Dealer.

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*Superior Drop-forgings*

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To enlighten or educate—to create new wants or to satisfy old ones—to protect and foster legitimate enterprise—to establish a medium of understanding between buyer and seller as a basis for mutual profit and advantage—to prescribe an economical price and the maintenance of a fixed standard of quality.

None know better than the buying public how well these functions have been fulfilled.

Modern advertising has given us an insight into various manufacturing processes. The producer has taken us, the consumers, into his confidence and told us just how his mince meat, his flour, his clothing, etc., is made. We know why certain things should or should not be. Advertising has told us—broadened our understanding and guided our judgment.

Modern advertising has enabled us to unlock the treasure house of the world's divinest melodies through the medium of the player-piano. The motor car has lengthened the business day and brought the fragrant countryside to our door. Men shave in comfort in ten minutes where they used

to take twenty. A magic bottle provides us with cold drinks with the weather at 90 degrees or gives us a warm beverage when Jack Frost dips at 40 below.

Modern advertising has elevated the standard of business ethics. It protects the manufacturer from unscrupulous competition and the consumer from base imitation. It conserves trade—extends business—creates good will. It enables the corporation, the manufacturer or private individual on trial to take his case directly to the public, and to secure the public's judgment on his policy or character based purely upon their respective merits.

Modern advertising has opened up new opportunities to the oppressed and poor of far-off lands. It has turned an unceasing tide of immigration to new countries. It has developed nations, and made the name of the New World a promise of better things among the people of the Old.

All this advertising has done and will continue to do. It is the ever-increasing influence for the advancement of mankind—the most potent, indeed, of the many forces influencing human action.

*Advice regarding your advertising problems is available through any good advertising agency or the Secretary of the Canadian Press Association, Room 503, Lumsden Building, Toronto. Enquiry involves no obligation on your part—so write if interested.*



There once was a plumber  
named Gus  
Who threaded pipe with a  
cuss  
But one day he got wise  
To the work of Nye Dies  
And now "he just eats 'em  
alive!"

## ARE YOU LIVING UP TO YOUR OPPORTUNITIES?

Every user of DIES is entitled to a free trial of a NYE DIE. This should convince every fair-minded man that I have faith in the tool's superiority—and inasmuch as you are the judge, you cannot possibly lose. What I want is to let you know the reason why **NYE DIES LEAD THE WORLD**. I make them solid and adjustable to fit Armstrong Stocks—and I make them of the finest steel. You could have a good razor made from an old Nye Die and shave with comfort. The Nye Skip Tooth Patent makes easy cutting. Easy cutting makes satisfied users.

Put The Two Together and They Make Nye Happy.

SEND IN THAT TRIAL ORDER.

NYE, THE DIE MAN

**The Nye Tool & Machine Works**  
124 North Jefferson St., Chicago

# WROUGHT PIPE

BLACK and GALVANIZED. SIZES, 1/8 IN. TO 4 IN.

All our pipe thoroughly inspected, tested to 600 lbs. hydraulic pressure and branded.

**ALSO NIPPLES**

Black and Galvanized  
All Sizes

Ask your jobber for



Brand

**CANADIAN TUBE & IRON CO., LIMITED**

Montreal

Works: Lachine Canal

# PEASE ECONOMY HOT WATER BOILERS

WRITE FOR CATALOGUE & PRICES

PEASE WALDON CO., LIMITED  
WINNIPEG

PEASE FOUNDRY COMPANY  
TORONTO

PEASE PACIFIC FOUNDRY LIMITED  
VANCOUVER

## TWO CENTS PER WORD

You can talk across the continent for two cents per word with a WANT AD. in this paper.

**ASBESTOS PRODUCTS CO. OF CANADA,** 227 WELLINGTON STREET, **MONTREAL**  
ARE PREPARED TO GIVE LOWEST QUOTATIONS ON ALL  
**PIPE AND BOILER COVERING CONTRACTS**



# OUR COMPLETE LINE

**"KING"** Round Water Boiler.  
(Sizes 1 to 8½)

**"ROYAL"** Round Steam Boilers.

**"ROYAL"** Square Steam and Water Boilers  
(19" to 48")

**"KING"** Radiators, Water and Steam.

We have a great deal of pleasure in announcing to our friends in the Trade that **our complete line** of Boilers and Radiators for Steam or Water are now ready for delivery.

We have all sizes, from the smallest to the largest, in stock for immediate delivery.

## Prompt Shipment Guaranteed

SEE Sectional View of 36"  
**"ROYAL"** Steam Boiler.

## Heating Surfaces

NOTE the **Arched Fire Chamber** and greater **over hanging** heating surfaces, than any other cast iron boiler on the market.

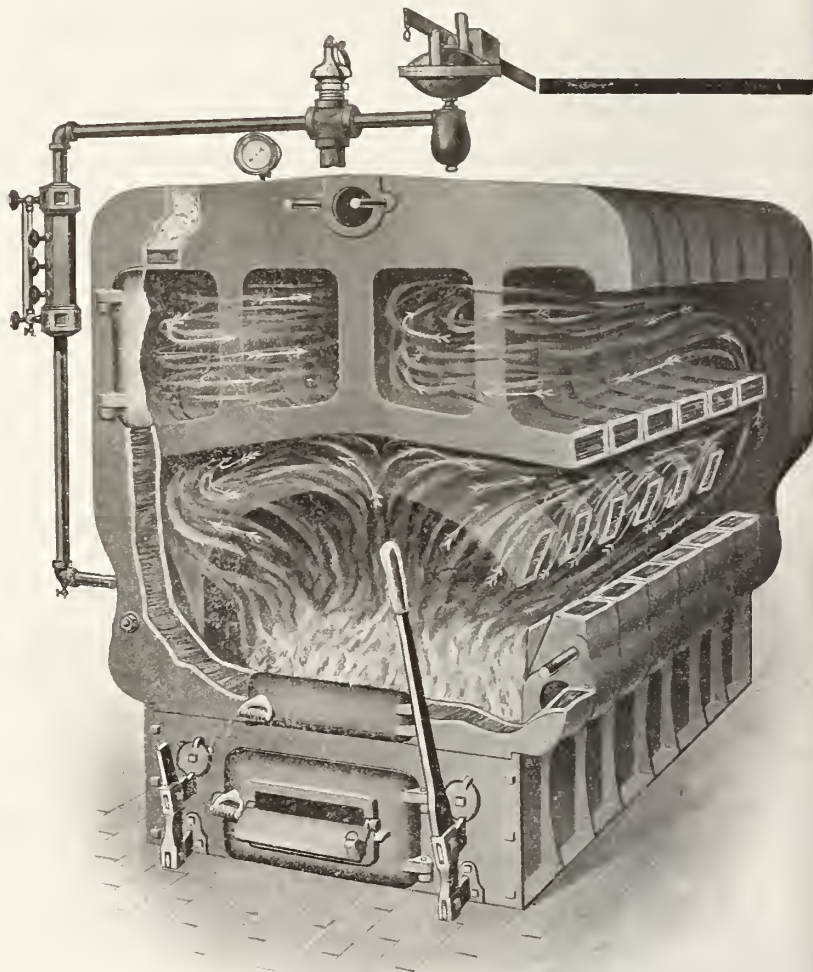
## Fire Travel

OBSERVE the **Triple Fire Travel** on **both sides** of boiler, also the **cross fire channels** between each section.

Satisfy your customers. **"ROYAL"** Boilers will satisfy the **most** exacting. **Try one.**

The **"ROYAL"** Boiler carries with it the same unqualified guarantee as the **"King"** Water Boiler.

Get our new Boiler Catalogue, just off the press.



Try us for your Steamfitters' Supplies.

# STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

Showrooms, 80 Adelaide St. E.

MONTREAL  
138 Craig St. W.

# Plumbing Plant in Big Public School

Charles S. Webster writes in the Plumbers' Trade Journal as follows:

**T**HAT cleanliness is as essential to the health and development of the body, as hearing is to the development of the brain, has been fully considered in the arrangement and installation of the plumbing in the new ten-room addition to the Glenwood Public School, Number 59, Buffalo, N.Y. This will be shown by the installation of several shower baths and a plunge, in addition to the usual closets, urinals, sinks, basins, and drinking fountains.

The several sketches will fully illustrate the work as recently installed in this building. Drain tile is laid around the wall on the outside and carried through same and connected into a 4-inch C. I. trap. The sewer to the building is an 8-inch salt glazed vitrified tile, connected to the main sewer, and carried to point ten feet outside the cellar wall. Here an 8-inch double hand hole running-trap is placed and a manhole of brick is built around same and carried to the surface of the ground. This is covered with a cast-iron perforated cover of the usual standard design.

All joints on the tile sewer are made by first calking with oakum dipped in strong cement mortar mixed in the proportion of one part cement to three parts sand, after which the balance of the hubs are cemented in the usual way. Each joint was carefully cleaned out after laying, leaving the interior surfaces smooth. The opening on the sewer side of the trap is closed with a 6-inch brass clean-out. A 4-inch extra heavy cast-iron pipe is connected to the opening on the house side and carried up inside the manhole and suitably capped for use as a fresh air inlet for the system.

There is an opening left in the drain outside the main trap, and an extra heavy cast-iron trap placed close to this connection. A 2½-inch wrought-iron extra heavy galvanized pipe is laid in a bed of sand and carried into the cellar and connected to the blow-off tank.

From the end of the tile sewer, a 6-inch extra heavy cast-iron sewer extends through wall with branches making connections to all soil, waste and conductor pipes, and all floor drains, as shown in Fig. 1. Several extra heavy clean-outs are placed in the sewer at convenient points and carried above finished floor.

## Sizes of Sewer and Branches.

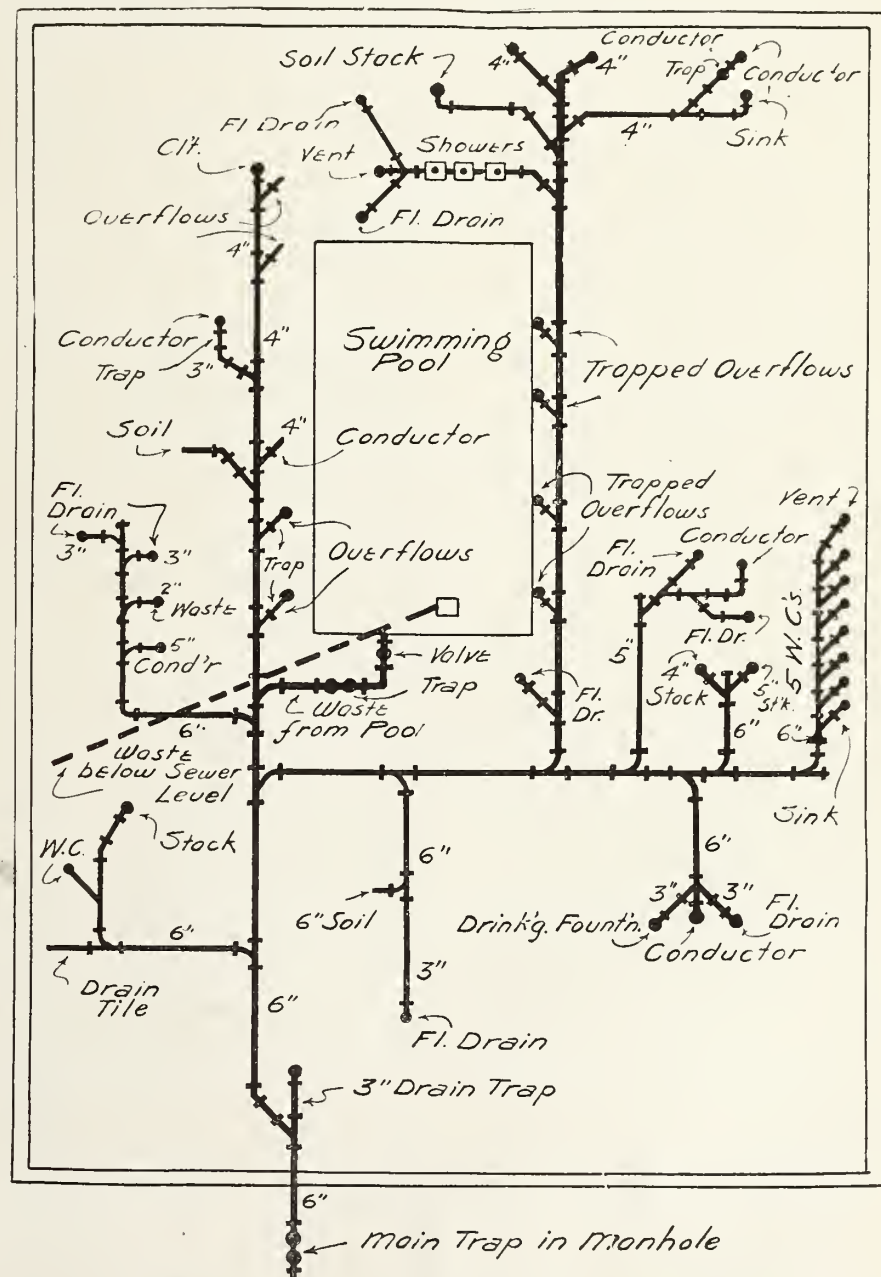
All branches for soil, waste, conductors and vent pipes are shown in Fig. 1, and of the sizes marked. The rain con-

ductors are of extra heavy cast iron, with heavy copper ferrules. All vent pipes over 3 inches are extra heavy cast iron. All vent pipes smaller than 3 inches are wrought iron pipe, with galvanized and beaded malleable fittings. No vent pipes are carried through roof without first being increased to 4 inches.

Where the vent pipes pass through the roof they are made tight with 18-oz. copper flashings, extending 1 ft. in height on the pipe. A counter flashing is turned down 1 inch into the pipe, and extended down over the flashing 6 inches and locked to flashing.

The waste and vent pipes from the drinking fountains are 2-inch galvanized iron pipe, with galvanized recessed drainage fittings.

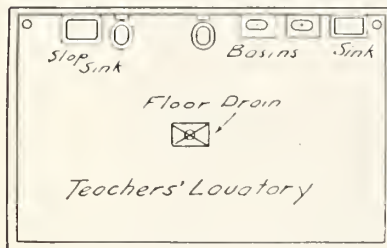
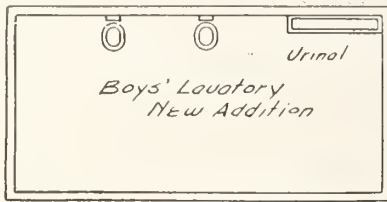
**Water Supply**—Water is supplied to the building by inserting a 4-inch branch in the main pipe and carrying a 4-inch galvanized pipe to the basement. At the curb, a 4-inch iron body gate valve and an extra heavy service box are placed inside the wall in the basement, a 4-inch gate valve and a plugged tee are placed; above this a Fuller hose bibb for the engineer's use and to drain the system.



Main drainage plan in Glenwood Public School, Buffalo, N.Y.—Swimming pool drain below sewer level.



The separate water supplies to the different fixtures are from a header. Each line is controlled by a separate



Floor layout for toilets.

valve and each is supplied with a  $\frac{1}{2}$ -inch pet cock for draining.

#### Hot Water Supply.

The hot water is furnished by two systems. A "Seaman's" automatic heater, furnishes hot water to the sinks, basins, etc., while a "Tobey" heater furnishes water for the pool.

All waste pipes are run so that pockets or traps are formed, and provided with suitable drain cocks. These pipes must run parallel to the walls and not diagonally across rooms. No pipes are allowed to run on outside walls, and all were put up in a neat manner, and securely fastened.

The connection to each is made with a loose-key, compression stop cock, placed close to the fixture. The branches to each drinking fountain are run separately from the basement.

Each valve has a brass tag 2 inches in diameter, stamped to indicate what line of pipe it controls, and attached to the valve by a brass chain.

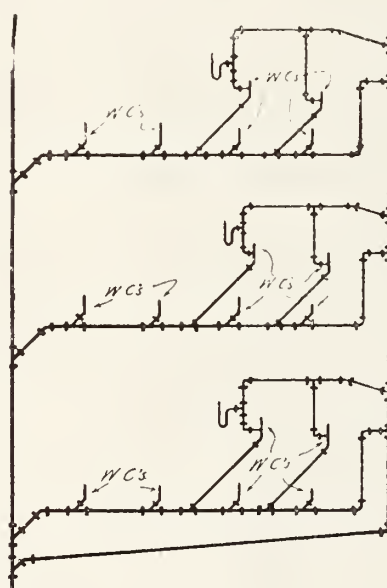
From the extreme end of the hot water pipes there is run a circulating pipe back to the heater connecting to a 1-inch pipe before entering the heater and provided with a valve and a check float.

The floor drains in the boiler-room are the ordinary 13-inch x 13-inch cast iron floor drains with 4-inch trapped connections to the sewer. All other basement or shower drains placed in lavatory floors are finished brass flush door

drains 6-inches in diameter with frames and strainers; the strainers are removable without disturbing the frames and are connected to soil pipe or sewer with 3-inch extra heavy enamel-lined traps, placed directly below the strainers. The seals of all the floor drains placed in lavatories or sinks are insured by a  $\frac{1}{2}$ -inch galvanized pipe connection to the nearest closet flush pipe.

#### Sanitary Drinking Fountains Provided.

There is a drinking fountain placed on each floor, fitted with nickel-plated self-closing supply valves and  $\frac{3}{8}$ -inch nickel-plated brass iron pipe size pipe and loose-key stop cocks,  $1\frac{1}{2}$ -inch gal-drain taps with nickel-plated flanged caps set flush with the floors and  $1\frac{1}{4}$ -inch galvanized vents to vent lines. The lavatories for the children are fitted with wash-down syphon water-closets, with automatic oak seats, cabinet finished cisterns with  $\frac{1}{2}$ -inch air spaces on all sides, nickel plated brass flush



System of piping in girls' lavatory.

pipes and  $\frac{1}{2}$ -inch compression stop cocks.

The principal's and teachers' closets are the same as the boys' and girls' lavatories, except they have hand action flush tanks with nickel plated chain, guide and pull with oak seats and lids. The closets in the principal's lavatory are provided with slate slab  $1\frac{1}{4}$ -inch thick with beveled edges and top surfaces countersunk and set in cement. The slop sinks are porcelain flushing rim, with porcelain traps with brass nickel plated strainers, and flush valve with double faucets. All closets and slop sinks are connected with heavy brass floor flanges and asbestos gaskets. In the boys' lavatories the urinals are troughs formed in the floor; the back and ends are of slate  $1\frac{1}{4}$  inches thick and 6 inches high, and set at a slightly inclined plane, so that the water will

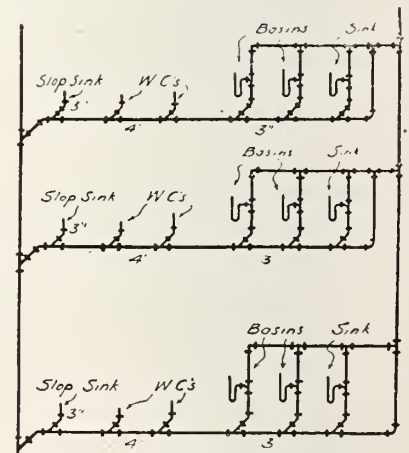
thoroughly flush same. The top is rabbeted to the flushing trough, and all joints are made water tight with slater's cement. The flushing trough on the top is cut out of a solid block of "Alberene" stone, 6 in. square on the ends; the flushing edges are cut and beveled so that the water will flow over the edge in an even and equal sheet over the whole surface of the back slabs. The supply is  $1\frac{1}{4}$  in. galvanized iron pipe with  $\frac{1}{8}$  in. holes 2 in. apart drilled in a straight line, and run along the top of the trough with a valve the same size of the supply, with lock shield and loose-key for controlling the supply. The urinal trough is graded to one end, and at the low point at 3 in. brass outlet with a brass wash-room strainer is calked into a 3 in. extra heavy P trap, enamel lined with a vent connection of 2 in. iron. The shower baths are placed in the basement and have cement floors pitching toward the centre; the back and partitions are of Pennsylvania slate 1 in. thick with a curbing 6 in. across the front of the pipe and extra heavy enamel trap with a nickel plated removable brass strainer.

The showers are fitted with  $\frac{3}{4}$  in. nickel plated brass supply pipes set 7 ft. 7 in. from floor with all ball joint to set at any angle desired.

#### Swimming Pool Outlet Above Sewer Level.

The swimming pool is 50 ft by 18 ft. and from a depth of 4 ft. to 5 ft.; is lined on the ends and sides with white enamel bricks. The bottom of the pool is 18 in. below the sewer line, and a 6 in. extra heavy galvanized iron pipe and a 6 in. high pressure gate valve and double hub trap with clean-outs in connection, are located in a tile manhole with iron cover and connected to the cast iron with calked joint. This connection is above the floor level of the pool.

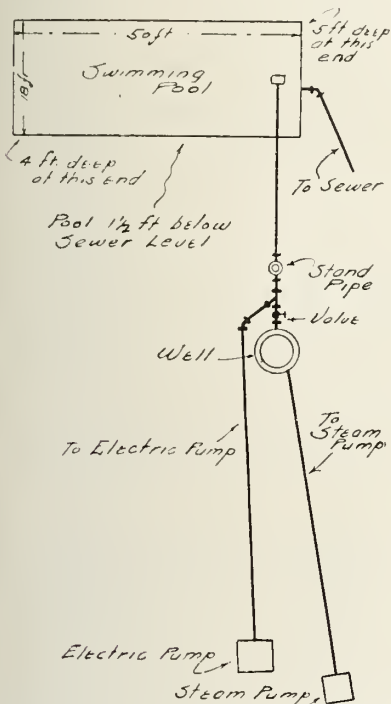
At the lowest point of the pool is placed a 4 in. extra heavy galvanized pipe with a high pressure gate valve,



Elevation of drainage and vent piping in boys' lavatory.

and this pipe is carried to a well so that the entire pool can be emptied into the well to be pumped from there into the sewer. There is a 4 in. branch increased to 8 in. iron pipe inside of valve in sewer connection leading to well so that the water may be pumped from the swimming pool without discharging into it. There are provided two suction connections and two foot valves in the piping from an electric pump, so that pump can pump from either the pool or well, as desired.

There is also an emergency steam pump with by-pass connections that can be pressed into service in case of an accident to the electric pump. In the engine room is an 8 in. pipe furnished with a heavy copper float, with brass chain attached and run over ball bearing pulley blocks to an indicator on a



Electric and steam pumps to dispose of waste from swimming pool.

graduated scale showing the depth of water in the pool.

Where the sewer connections pass through the walls, they are provided with cast iron screw flanges and gaskets to insure water tight joints. Around the sides of the swimming pool, overflow gutters are provided with 2 in. cast iron enamel traps with hubs for brass clean-out screws, cap ferrules in each connection, and connected into main lines on each side of swimming pool.

For the purpose of heating the swimming pool, there is installed a heater having a capacity of 5,000 gallons per hour. The heater is placed on a concrete foundation in the engine-room. The cold water supply pipe to this heater is 3 in., run direct from the 4 in. main

pipe in basement. All the water for the swimming pool will have to run through the heater while the pool is being filled. From the top of this heater there is taken a 3 in. hot water pipe, and from this two 3 in. pipes to the swimming pool. There is also a 2 in. branch pipe that will lead to the various fixtures in the building when the heater is not being used to heat the pool. Each have shut-off valves, and the pipes to the swimming pools are fitted with a thermostat, so that the water may be regulated down to a temperature of 80 degrees, as it runs into the pool. This thermostat is placed at a point where the water leaves the heater, so that when the water is shut off from the pool the thermostat will act on the temperature of the water supplied the fixtures in the building. The water enters the swimming pool through two brass boxes fitted for 3 in. pipe, with nickel plated brass faces attached with brass screws, and have flush spreaders. They were built into the lining of the swimming pool during the construction of the same, and set flush with the enamel brick and immediately over the cove course.

### THE FLOW OF CONDENSATION.

Editor Plumber and Steamfitter.—Is it a wise plan to so run the steam mains that the condensed steam, in the form of water, returns to the boiler in the main supply pipe. In other words, the water comes back against the outgoing steam? I had an argument with a brother fitter, he claiming it would work O. K., and I thought otherwise. We are asking for some enlightenment from you.

N. K. and J. H.

In this case, as in all others relating to heating, common sense, investigation and experience should govern the action in installing. If the steam main is properly and accurately proportioned to the amount of radiation taking into consideration the length of the main, we believe in many house heating jobs the water, returning against the steam will give no trouble. One of the best small steam heating jobs we ever saw had 350 feet of radiation on a 2 inch main, the water returning against the steam pressure and the main had only 1/4 inch pitch in 10 feet. This job has worked successfully for over fifteen years, and has never carried to exceed 1/2 of a pound of steam in the coldest weather which in that section means about 25 degrees below zero. However, had that steam main been only 1 1/2 inches we believe there would have been trouble. The general practice, however to-day seems to be to pitch the main away from the

boiler on such steam jobs; but, tempered with discretion, we are confident that the water can be returned against the steam if necessary. The condensation is much less than is generally supposed in such cases.—D. C. H.

### WHAT MAKES THE NOISE?

Editor Plumber and Steamfitter.—On a job I am called upon to fix over there has always been an unpleasant noise in two of the radiators. Both are 40 ft. radiators and are at some distance from the boiler. They are both connected to one inch risers, the radiators being "bushed" and on the one pipe plan. Would you please tell me what would be best to do?

C. T. Sexton.

The risers you mention (one inch) are too small for the radiators. The steam passes through them too rapidly and meeting the returning condensation churns it and makes the unpleasant noise. If we were doing the repairing ourselves and wanted to make sure of a good job, we would make the branch from main to riser 1 1/2 and the riser 1 1/4 and put a 1 1/4 valve on the radiator. You state that the radiators are quite a distance from the boiler and if fixed as we suggest the job ought to work out all right. The branch might be run 1 1/4 inch if it is not over eight feet long. However, we should prefer the 1 1/2 inch size.—D. C. H.

### WHY THE DIES DON'T "TAKE HOLD."

Editor Plumber and Steamfitter.—The dies (solid) in the shop where I work simply will not catch hold easily. What can I do about it?

Helper.

Are you sure that you are not over anxious? Do you cut or file off the bur on the pipe each time before you try to "catch the thread?" If so, then we should say that the boss needed to get some new dies and if he won't we should be very much disposed to quit and let him run the dies himself.—D. C. H.

### Who Will Do Gilding?

Vancouver, Aug. 16.—The Trades and Labor Council of New Westminster has on its hands a quarrel between the Plumbers' and Painters' Unions who wish an impartial decision as to which union shall be required to gild radiators in new buildings when the latter have been installed.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, SEPTEMBER 2, 1912

The need of taking precautions is well illustrated by the experience of a Montreal Engineer related elsewhere in this issue. It seems that it does not do to take any thing on faith—that is unless it is well known with what kind of a man the deal is being made.

**THE BEST LAW FOR BUSINESS** There are architects who like sharp practice. They would rather have a man lose, through doing work for them under conditions which he was not led to expect, than pay a little more than compelled by law. Law is a great thing. It is meant to make necessary fair dealing among men, yet there are times when law can be used to secure just the opposite result. But that kind of sharp practice, after all, may mean a future loss which will more than offset the immediate gain. The best law of business is the golden rule.



From all parts of the country there comes word that work is plentiful, but that men are scarce. The trouble is one which will not be easily rectified, for after all it is the unevenness rather than the great volume of the work which is responsible for the trouble-

**WORK PILES UP. MEN ARE FEW** some situation. At this season work piles up. The new buildings are not far enough advanced to enable the installation of plumbing and heating fixtures to be finished. The job work has commenced.

If this volume of business kept up the year through more men would come in from England and the States seeking employment, or more would take up the work here. As it is, however, there are few masters who can keep all the men they want all the year through.

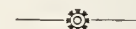
What is to be done to bring about a more satisfactory state of affairs? It would seem that an effort is necessary to get more men, but perhaps even more there should be an effort made to get the work more evenly spread over the entire year. More and more, for instance, the aim should be to get new work finished by the end of August. For the delays, of course, the builders are by far more to blame than are the sanitary and heating engineers; yet the sanitary and heating engineers are to blame in a sense for the builders delays. If they urged an early completion of the work, so that they can get their part done, this would have some effect.

"I'll never go to that man again. He promised to fix this furnace yesterday. I've telephoned to-day and he said a man was on the way, but there has been no man arrive."

Those who have not heard such an exclamation are fortunate. **FRANKNESS WITH CUSTOMERS PAYS** None will deny that such exclamations are to be heard, though some there are who can say with pride that they have not been the cause of such an utterance. There is a clever saying, with some truth in it, which runs as follows: "It is not the profanity we utter so much as that we cause for which we shall be punished." Certainly the annoyance we cause does us more harm than it does the one annoyed. An angered customer is usually a customer lost.

A broken promise does a great deal to undermine confidence, and that might well be remembered at this season when job work is about to commence. When people telephone and ask when a certain bit of work can be done, tell them. If all the men are busy and it will be impossible to touch that job until to-morrow, say so. Say the job can be executed in the morning, and then see that it is so executed. A man who gets the reputation for telling the exact truth will get the repair business. Of course mistakes will be made, but mistakes are understood and can be explained. It is the false statements which people find to be false which do harm.

A dealer was recently asked to send up a tap to replace one which had been broken. This he promised to do at once. Later the man wanting the tap telephoned again. He was told the tap was on the way. In another hour he came into the store and found the tap wrapped up waiting for delivery. He was annoyed, and perhaps not without reason.



### HIGH PRICES THAT ARE HEALTHY.

It might as well be recognized that Canada is in for a period of high metals. Tin is up. Copper is up. Lead is up and going up still. Iron is up, and it is freely predicted that it will keep going up. Nor is the present movement altogether due to syndicates or other speculative interests. In this respect it is worth while quoting the opinion of a United States contemporary.

"It is well for consumers to remember that there is a decided difference between the high tin prices of last year and the present. Last year's prices were caused by a cornered situation in London, which at one time put the price of spot tin over £40 over the price of three months tin. The present advance is not caused by any corner conditions, but is simply a buying movement backing the statistical position. It will be noticed that both spot and future deliveries continue to advance side by side. It is also interesting to note that the price of spot tin to-day is at the highest on record except for the June (1911) corner."

What is true of tin is also largely true of other metals. The strike troubles are not altogether responsible for high lead. More is needed than has been needed for some years.

Iron, too, is in demand. The call for pipe has been tremendous. Other products are being sought eagerly. To get the necessary pig is becoming more and more a problem. Naturally, then, iron and its products will rise.

The upward movement will give a further impetus to those who shout about the high cost of living. But it will not bring hard times. Quite the reverse. When high prices are largely caused by a heavy demand those high prices are healthy.



#### POINTED EDITORIALS.

The cry is still more men.

\* \* \*

Lead has advanced again, and the likelihood is that a future advance will come. All of which means, "cover."

\* \* \*

New officers of the Canadian Society of Sanitary and Heating Engineers are getting to work. Good for the new officers.

\* \* \*

Saving the 2 per cent. cash discount is well worth while. On a big job the 2 per cent. will be a large proportion of the profit.

\* \* \*

When figuring on a job don't rely on the extras to give the profit. There likely will be some revenue yielding extras, but not necessarily.

\* \* \*

Over 100 new towns between Winnipeg and Edmonton this year, according to the Government blue book. Seems as if there is still a large "terra incognita" for the master plumber.

\* \* \*

Many Montreal members are enthusiastic baseball fans. It is a safe bet that the convention next year will adjourn, some afternoon to see the Montreal Royals battle.

\* \* \*

The early bird catches the worm, but only the early bird who goes after the worm in an intelligent way. There is no good to be derived by rushing after a job prepared to get it at any cost.

## The Heavy Loss from Fire

From the always conservative underwriters' office comes an estimate of the loss resulting from serious fires during the first seven months of 1912. This, it is said, is \$16,365,000—more than two millions in excess of the figures for the same period last year.

The announcement is sufficiently serious to demand more than passing attention from every good citizen and every good business man. That amount is really waste, and the question, of course, is how much of it is avoidable waste?

Figures, it has been said, never lie. On the other hand Mr. McLean of the Railway Commission, when he was professor at Toronto University, used to say that if asked to give the superlative degree of "lie," he would say "statistics." Of course he meant that figures are often twisted, or distorted, so that they convey a wrong impression, and undoubtedly this is so. The increase in fire losses in 1912 to date, over 1911 to the same date, does not necessarily mean that protective measures have been less efficient. There have been more buildings erected. Therefore the risks of fire have been greater. It is doubtful if the \$2,000,000 extra loss, is more than proportionate to the additional risks due to the additional buildings.

Still a fire loss of \$2,000,000 a month—which is what the figures of the underwriters show—is too much. The slang expression, "Money to Burn" is herein given actual meaning. Two million dollars burned is two million dollars thrown away.

A consideration of these figures, of course, causes the need of insuring to loom up large. This is as it should be. The plumber who does not keep his stock well insured is actually playing with fire. But these figures also show the need of greater precautions against fire—as well as precautions against the loss resulting from fire. Why all this waste of money anyway? Why the great losses in plumbing stores, which the insurance authorities state are as large as losses in dry goods stores?

Often fires result from improper methods of storing oil, and carelessness in handling this. Often they are caused by defective heating system, or by defective wiring. Both troubles can be guarded against by an occasional inspection. A rubbish heap in the cellar, a match—how often have these two started a destructive blaze, which a little work with a broom would have prevented.

From time to time there are cases where people profit by reason of a fire, even if the cause has been honest. Old stock is often cleared out, which would otherwise have been hard to sell. But generally fire means loss, even though the value of the goods destroyed is covered by insurance, and even though the profits for the enforced period of inactivity are insured—a thing which is quite possible. Discontinuance of business gives the opposition a chance to cut into trade, that means great loss.

Reducing the number of fires would help all. It would, among other things, result in a reduction of the rates for protection against fires. A little expenditure for prevention, therefore, is money exceedingly well spent.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## MAKING THE VENT PIPE WATER TIGHT.

Editor Plumber and Steamfitter.—I wish you'd show in a drawing how they make a tight job where a vent pipe, more particularly an increaser, goes through the roof. I will consider it a great favor.

H. M. S.

Agreeably to our correspondent's request, we have had a drawing prepared showing what he requires. The shield is of copper into which is caulked oakum and a pouring of lead is then

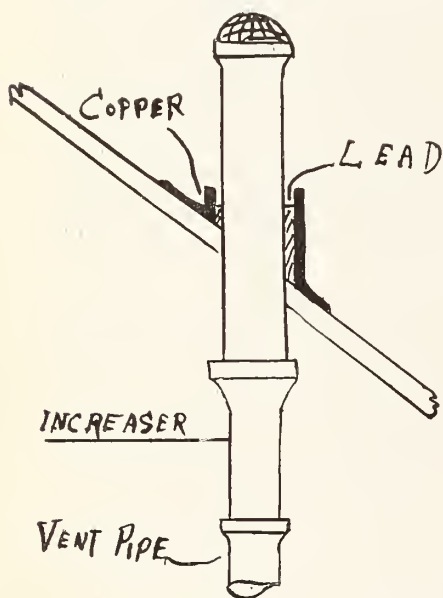


Figure 1.

made. The arrangement should, however, be worked up under the shingles and fastened to place before the caulking of the lead and oakum takes place, and into the top of the increaser you should place a screen of some kind if the stack is very apt to be troubled with leaves or sparrows which sometimes give trouble. The screen can be removed in the winter time.—D.C.H.

## CLAMPS FOR HOLDING STACK.

Editor Plumber and Steamfitter:—We had to run in a stack and had no supports handy so blocked the stack. Now some iron supports must be used as they are specified in the contract. Can

you show some that could be easily made at home?

Hasty.

We show some in Figure 2 that can be quite easily made in most any



## SPLIT CLAMPS

Figure 2.

blacksmith shop. The drawing will explain itself without our further comment.—D. C. H.

## STEAM AND OIL SEPARATOR.

Editor Plumber and Steamfitter.—Will you tell me how a separator that separates the oil from the steam works?

G. E. Fitch.

From a side view of the separator cut in half it would look similar to Fig. 3. The point "S" is the drip pipe. Points "A" and "B" are where the water glass is attached. The baffle plates "X" and "Y" are what the oil laden steam strikes against and the action removes the oil or water and delivers the steam, cleansed, into the steam main beyond.—D.C.H.

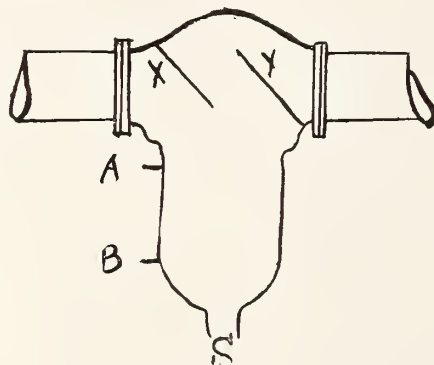


Figure 3.

## LEAKY PIPE COIL.

Editor Plumber and Steamfitter.—What can I do to a leaky pipe coil (new) that persists in leaking? I have caulked and caulked the joints and

have allowed in plenty for the expansion, yet it still leaks on me.

Fitter.

Probably your dies were set too deep. The only thing we believe you can do to successfully stop the leaks is to unscrew pipes where the leaks appear and wind into the threads small strands of packing, after which make up the coil. Such a proceeding ought to effectually stop the leaks.—D. C. H.

## GETTING BY CELLAR BEAMS.

Editor Plumber and Steamfitter.—I have a steam job to put in and must get by several beams. They will not allow the running of wet returns and so I am asking you if you can suggest any way out of the difficulty.

Worried Fitter.

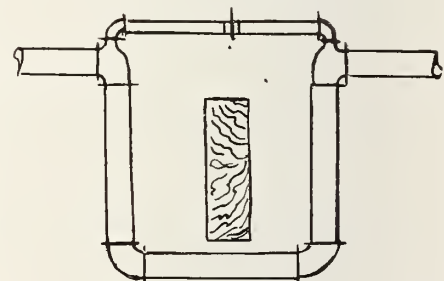


Figure 4.

We find that the way shown in Fig. 4 is sometimes used by steamfitters to overcome the difficulty mentioned by our correspondent. Be sure that the arrangement does not cramp or draw unduly so as to strain the threads and cause leaks.—D. C. H.

## THE FUSIBLE PLUG.

Editor Plumber and Steamfitter.—Some house heating boilers I notice are equipped with fusible plugs for the purpose of safety. Others are not. Do you think that they are necessary or of any use on such a boiler?

J. E. Jones.

We find some authorities state that fusible plugs are useless on house heating boilers as they do not melt at a temperature which corresponds to the low steam pressure carried. We asked our practical man what he thought about the matter and he promptly gave

several instances of jobs where he knew that the pressure carried was less than ten pounds and where the water in the boilers had gotten low, the plugs then melting out. He seemed to be of the opinion that, in many instances, the safety plugs were a mighty safe thing to have on the boiler.—D. C. H.

#### WHAT KIND OF FLOOR PLATES?

Editor Plumber and Steamfitter.—I have an extra nice steam heating job to put in and would like to ask a bit of advice about one of the small matters of the job—viz., floor plates. Now what kind would you use if you wanted to do a bang up job? It is in a three-story building, by the way.

D. F. McFarland.

We should use heavy floor plates on the first floor of a pattern that would correspond to some first class adjustable floor plate and ceiling plate which was connected with an adjustable sleeve. The combined floor plate and ceiling plate to be used in the second and third stories. This would give you a good substantial job and the ceiling plates would always be held in place when you put them and we believe that the customer could not help being well satisfied with the job.—D. C. H.

#### WHAT PRESSURE?

Editor Plumber and Steamfitter.—Will you kindly tell me at what pressure house heating safety valves on the boiler is supposed to "pop off" on? I have one and it will not "pop off" under 25 lbs. pressure. Is that enough or too much?

B. E. Rider.

In nearly all of the house heating jobs that it has been our privilege to examine, the value popped at a much less pressure than our correspondent mentions. We believe that it is the general practice to have the safety valve "pop" at about ten lbs., and that in actual testing it "pops" at about eight pounds and delivers steam copiously at from eight to ten pounds. If our friend's boiler will not "pop" until a pressure of 25 lbs. has been reached, he should have the fitter put on a valve that will do as we have mentioned not on account of safety, but because of economy as he will waste much fuel in carrying too much steam many times.—D. C. H.



#### Have New Uniforms.

Winnipeg, Man.—Uniforms, new in design as well as material, will mask the members of the Steamfitters' union when they march in the monster parade to be held this labor day. Walter Higgins was elected treasurer last night.

## Need to Guard Against Too Low Tendering

Sanitary and Heating Engineers, Fearing That They are to Have No Work, Sometimes Quote Altogether Too Close—The Natural Result is a Loss on the Job—The Need of Care in Buying.

Now that the season is getting well advanced there are a number of sanitary and heating engineers waking up to the fact that they have been rushing themselves to complete work for which they are to receive little or no profit. They were the ones who rushed in where angels feared to tread, and the natural result followed. They are getting anything but an angelic experience.

At the commencement of a season some invariably get the fear that no work is coming their way. They get desperate. They feel that they are going to be left with nothing to occupy them until the repair work of fall commences. They make up their minds that they will get a contract or two, and they figure so low that they must get in advantageously. At least they think they must get in advantageously.

#### The Rude Awakening.

Instances of such precipitous action are coming to light almost daily. Men who tendered several times without success got almost panic stricken. They tender yet on another job, putting the margin for profit down to a decimal. They are successful in securing the tender. They rejoice. Then they have a little difficulty getting men. They find that they have to pay a little more for some of the material required than they had expected. The exceptionally small profit which they allowed themselves they see disappearing.

The folly of this mode of procedure is patent. It not only loses money for the man tendering, but makes architects feel that others—who are demanding a fair profit for their work—are unreasonable in their figures. There seems to be no way of preventing such action, however, except just to make the master plumbers see that they would be better without a contract than to take one which means a loss instead of a gain.

#### Price Change Meant Loss.

How easily a small profit can be turned into a loss is illustrated by the experience of a master plumber just recently. He figured on a certain work. His prices were close, for he wanted the job, yet he allowed himself a reasonable profit on all the branches of the work. But he made one mistake. When he tendered soil pipe was being quoted at 70-10 and 5 off the list. The tenders

kept in hand some time. Finally the contract was awarded, and the successful man at once ordered his soil pipe. But prices had advanced. The discount then quoted was not 70-10-5 but 65 per cent. By reason of a large order the master plumber was able to get a little better price than this, but still he could not make up the difference in the discounts. Instead of making a little on the soil pipe he put into the work, he lost about 10 per cent.

#### The Question of Buying.

That instance brings out the necessity of ordering early. There are difficulties in the way of course. The great majority of sanitary and heating engineers have not a great deal of loose capital. The money they have is working. They are, therefore, not able to buy large supplies. When they tender on a contract which will require the purchase of a good amount of supplies they count upon buying these only when sure the award has been made to them.

There is method in this course of procedure. No matter what capital he has a man likes to run his business on as little as possible. Now it is possible to draw on a job. A part of the work is done, and the sanitary engineer can get money from the architect. With this he can pay for the material used in that part of the job, and in almost every case can thus save the 2 per cent. cash discount.

#### When Early Ordering Pays.

But to pay for the material used in the job, out of the money got for the job, and still save the 2 per cent. cash 30 days discount, means ordering their supplies just as they are to be used.

The master plumber, however, has to bear in mind that even risking the loss of the 2 per cent. cash discount it is sometimes well to order early. Take the case of that man who had to pay more for his soil pipe than he had expected. Had he order early he would have got the 70-10 and 5 discount. He might have lost the 2 per cent., but that would have been infinitely better than getting only 65 per cent. off the list. Coming advances do not always cast their shadows before, but it was pretty generally predicted that soil pipe was likely to advance and that buying should not be delayed. An immediate buy, therefore would have been good business.



# Methods of Estimating Heating

A SET of twelve questions relating to office practice in estimating heating and ventilating work, accompanied by a summary of seven answers received, constituted an interesting paper presented by Mr. John D. Small at the recent summer meeting of the heating engineers' society.

The question and a summary of the answers are as follows:

1. What rule do you use for estimating radiation?

The majority of expressions on this question favored a formula based on the number of heat units loss through various cooling surfaces and materials and the number of heat units required to compensate for air change due to leakage and exposure. Co-efficient tables for this purpose are found in a number of handbooks and the losses due to air change represent what the engineer's judgment dictates, except where fixed by law. Carpenter's and Mill's rules are largely used also.

2. How many air changes per hour do you allow in the following classes of buildings?

Residences.  
Hotels.  
Hospitals.  
Office Buildings.  
Store Buildings.  
Theaters.

Factories (except where exhausters are used).

This factor seems to be a very indefinite one where the amount of air displaced is not fixed by law or otherwise. In buildings where no mechanical ventilation is provided, the rate of air change would be affected by a number of causes, one of the principal causes being natural leakage, which varies with the kind of construction, the exposure, the wind velocity and the height of the building.

Under the head of construction, the kind of window frames used has a great deal to do with the rate of infiltration of air. The sides of the building exposed to prevailing winds will, of course, show a marked increase in air displacement over the protected sides. Air currents, however, between high buildings, due to deflection from one to the other, will often affect the surface which otherwise would be protected.

Tests made by Mr. W. H. Whitten have demonstrated that with wind velocities below 6 miles per hour infiltration is reduced to a minimum; while with velocities as high as 30 miles per hour a very substantial effect is produced

upon the rate of air change of the interior of the exposed portion of the building. Again, the leakage is relatively greater as the building increases in height due to increased wind pressure at increasing heights. From the foregoing observations it is important to use considerable judgment in arriving at the maximum allowance to compensate for losses due to this element, and in the absence of a fixed rule, the following schedule, in the author's opinion would be a safe basis for calculating the amount of heat required under maximum conditions of air change in addition to that required to offset losses through the cooling surfaces. Allow air changes per hour for various rooms and classes of buildings as given in the table:

## Table of Number of Air Changes to be Used in Heating Calculations.

Office Buildings — Portions above grade, 1 air change per hour; basement general, 4 air changes per hour.

Factory buildings, which have no mechanical or natural ventilation, one change per hour. For factories where large doors from the outside are frequently opened, about four air changes per hour.

Residences—Having loose windows, two changes per hour.

Churches—Four changes per hour except small rooms, which should have five to six changes per hour. These data for churches contemplate mechanical ventilation.

The majority of public buildings and many of the factories require ventilation or the fan system of heating. The usual specifications of air supplies per person are as follows:

Hospital, ordinary—35 to 40 cu. ft. per min. Hospitals, epidemic—80 cu. ft. per min.

Hospitals—Tuberculosis—

	Air Change.
Dejection room ... ..	6 Min.
Toilet rooms ... ..	6 "
Bath and duty rooms ... ..	8 "
Kitchen ... ..	3 "
Serving ... ..	10 "
Fumigating ... ..	10 "

Workshops—25 cu. ft. per min.

Prisons—30 cu. ft. per min.

Theatres—20 to 30 cu. ft. per min.

Meeting Halls—20 cu. ft. per min.

Schools—30 cu. ft. per min. per child and 40 cu. ft. per min. per adult.

Hotels — Following air changes are usual:

Room.	Air Change.
Engine ... ..	6 Min.
Kitchen... ..	1½ "
Restaurant ... ..	6 "
Base toilet ... ..	5 "
Billiard ... ..	10 "
Barber shop ... ..	8 "
Dining room ... ..	15 "
Palm room ... ..	12 "
Buffet ... ..	8 "
Cafe ... ..	8 "
Lobby under balcony ... ..	8 "
Main lobby ... ..	20 "
Banquet hall ... ..	15 "
Retiring room ... ..	10 "
Kitchens ... ..	8 "
All others ... ..	15 "
Except Toilets ... ..	6 "

Libraries;—

Room.	Air Change.
Corridors ... ..	15 Min.
Basement rooms ... ..	15 "
Reading rooms ... ..	12 "
Inside rooms ... ..	8 "
Corner rooms ... ..	7 "
Toilet rooms ... ..	5 "

Laundries—should have an air change every 4 to 6 min. Radiation on sides of buildings subjected to prevailing and cold winds should be increased 10 per cent. up to the 10th floor and 15 per cent. above.

3. In your opinion is it more practical to heat and ventilate with hot air only or to ventilate with tempered air and provide direct radiation for heat losses through cooling surfaces?

While a difference of opinion prevails on this subject, it seems to be desirable to provide direct radiation for use when fans are shut down. The argument is advanced that omission of direct radiation makes it impossible to heat without ventilating, as the fan must be run in order to heat. Direct radiation in addition to the fan system, one to offset the cooling effect of walls and glass and the other for ventilation only, makes a flexible system and admits of uniform regulation of temperature for various exposures perhaps better than the fan system only.

It is also true that the relation of supply and exhaust opening in a given room sometimes results in short circuiting and defeats through ventilation as well as requiring direct radiation to care for portions not warmed on this account. Therefore, it would appear that where possible it would not only be more practical but more satis-

factory results could be guaranteed if direct combined with the blast system is installed.

4. Do you consider it good practice to install radiation in factories only sufficient for normal winter temperatures and increase pressure to compensate for deficiency when maximum winter temperatures prevail?

The consensus of opinion is decidedly against installing radiation in factories only sufficient for normal winter temperatures and increasing steam pressure to compensate for deficiency when maximum winter temperatures prevail, especially where exhaust steam is used for heating as the engines would be subject to back pressure and general efficiency reduced. The money saved on first cost of the heating system would be spent in operation later, thus resulting in poor economy on the long run. It would, therefore, appear that this method would not be considered good practice, although owners are often influenced to cut down the first cost in this way, not fully realizing the net result.

5. Do you advocate using mains as heating surface or covering them throughout?

The conditions and class of buildings govern largely whether the mains should be used as heating surface or should be covered. Under the head conditions, would be considered the cost of covering, the location of mains and the length of run together with the length of risers in connection with the mains. For low buildings and not excessively long runs, the mains are often left uncovered, and without bad effects. In high buildings and in central heating systems, however, it is essential to cover mains in order to diminish the steam pressure and therefore temperature to a minimum extent at the terminals. There have been cases where the steam chilled or condensed to such an extent due to surrounding temperature that it became necessary to cover the mains. The consensus of opinion is to cover the mains, as a rule, for best results in heat distribution.

6. To what extent do you advocate the use of vacuum devices in heating systems?

The use of vacuum devices in heating systems is looked on with favor in the majority of cases, especially where exhaust steam is used for the following reasons: It aids circulation of the steam, tends to remove back pressure; allows small piping to be used, thus reducing cost for long runs; eliminates air valves with the attendant annoyance occasioned by adjustment, leakage, etc.

However, there are many instances where vacuum systems are of no particular advantage. On the other hand,

there are cases where it is absolutely necessary to install such a system to accomplish circulation of the steam and the return of condensation. On the whole, installations would be benefited by the use of vacuum devices. In this connection it has been the author's observation that pipe sizes have been reduced to pressure it was really necessary to carry from 2 to 8 lbs. steam pressure to overcome the resistance in supply piping, a condition which defeats one object of a vacuum system. With a differential existing at each unit it is important to eliminate undue resistance to the flow of steam to obviate carrying excessive vacuum to balance this resistance.

7. In your opinion, is it feasible to standardize methods of estimating heating and ventilating in different classes of building where there is no law governing the installations?

This is a delicate question and does not permit of definite answer. The judgment of the engineer is a large factor in this connection. The author's thought in putting this question was to ascertain if, for instance, this society could consistently go on record as favoring the adoption of the method of estimating direct radiation on the heat unit basis and establish given values for various conditions and classifications and construction materials.

8. In large open rooms, such as in stores, factories, etc., would you figure the radiation the same on all sides and then place a larger proportion on the most exposed or windward side? If so, what proportion? or would you figure it the same on all sides and add radiation on the most exposed sides? If so, how much?

The majority favor figuring the radiation on the same basis for all exposures and placing a larger proportion on the most exposed or windward sides, it being the idea that the heat will equalize due to wind pressure, and eventually find its way to the opposite side of the building, whereas, if the same proportion were placed all around, the temperature on the windward side would be too low, and on the opposite side too high. To figure the radiation the same all around and then add to that on the most exposed or windward side would require more radiation than otherwise, and would not be so effective and economical as the first method.

9. In figuring on the basis of the heat loss through various cooling surfaces, what authority do you use for these coefficients?

Carpenter, Wolff, Peelet, Box, values deduced from the German authorities by Kinealy and various handbooks which quote values deduced by recognized authorities are referred to for those data.

These tables are very helpful in figuring the heat losses through various building materials and combinations of materials which compose the walls and roof of a structure.

10. In estimating radiation, do you consider the type of window construction, whether loose fitting or provided with patented weather strips?

11. If windows are provided with weather strips, would you reduce the amount of radiation? If so, how much?

Ordinarily it is assumed that the sash and frames are of wood, and not provided with weather strips. If concealed weather strips are used the radiation may safely be reduced from 10 per cent. to 15 per cent. While if metal sash and frames are used the radiation should be increased.

12. In your opinion, is it feasible to heat a factory building comprised of two or more typical floors by running pipe coils around the outside walls, any given number of pipes high, regardless of the contents or floor area?

Given a factory building, exposed on four sides and two or more typical floors, it has been held that to install pipe coils around the walls to care for cooling surfaces is sufficient to maintain proper temperature without taking into consideration cubical contents. This seems to work successfully in some cases, and in others it is found that radiation is insufficient. There is a certain percentage of a room of large dimensions which may be neglected with regard to air change, but just what proportion is yet to be satisfactorily answered. The author would like to obtain a discussion on this point particularly and wishes to thank the members who responded in the interests of the foregoing.



#### POLISHING A LEAD PIPE.

Editor Plumber and Steamfitter.—When I am finished with a piece of lead work and desire to polish it, what is the best way to do the job?

Apprentice.

Rub the lead with the grain with a piece of old emery paper and when it is bright enough apply a coat of shellac to the pipe and you will have a good job.—D. C. H.



#### TO PREVENT IRON WORK RUSTING

Editor Plumber and Steamfitter.—How can I prevent the iron work on boiler doors, etc., from rusting?

W. E. D.

Paint them with asphaltum is one method employed. Another is to use beeswax which has been dissolved in benzine. We favor the first method. If you use the second, be sure there is no fire in the boiler.—D. C. H.



# Complete Course of Sheet Metal Work

By L. W. KOSER

Prob. 10, plate 19, shows a method of getting the pattern for a square pyramid. Fig. 1 shows the plan, Fig. 2 the elevation, Fig. 3 a diagonal elevation, and Fig. 4 the pattern.

First draw the outline A B C D, of Fig. 1, which represents the size and shape of the pyramid at the bottom. Then draw the diagonal lines into the center O. These lines are the hips or corners.

Then erect the elevation Fig. 2, making the line R P the desired height.

Then erect the diagonal elevation Fig. 3, in which the height F V equals the height R P of Fig. 2, and the base line U V W equals one of the diagonal lines on Fig. 1 as B O C.

Then a line drawn from F to U or F to W, gives the true length of the hips.

Place the point of the dividers at F and the lead at either U or W, and at any convenient centre, as G describe the arc N M.

Now place one point of the dividers at A, and the other at B. Fig. 1 and transfer this space to the arc N M. Transfer each of the other spaces of Fig. 1 to the arc N M, as shown by 1, 2, 3, 4, and 5.

Draw a straight line from 1 to 2, 2 to 3, etc., as shown. Then draw lines into the centre G, and bend the pattern on these lines.

Allow for lap or fold, the size of which varies according to the size of the article wanted.

Prob. 11 represents a triangular or three-sided pyramid, and is developed

in practically the same manner as prob. 10.

First draw the outline A B C, of Fig. 1. Then find the centre and draw the lines into same as shown by A O, B O, and C O. (See prob. 12.)

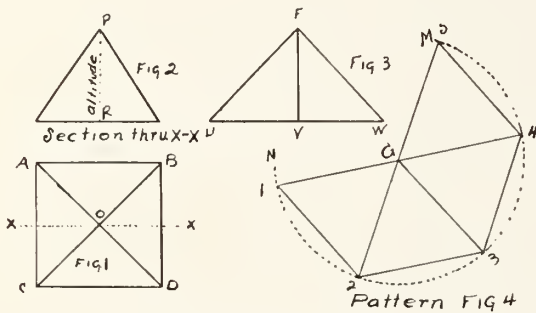
What we want to get now is the true length of the hips, so we draw the lines S U of Fig. 2, making it equal in length to any one of the hip lines as A C.

Then we erect the vertical line S R, making it any height desired.

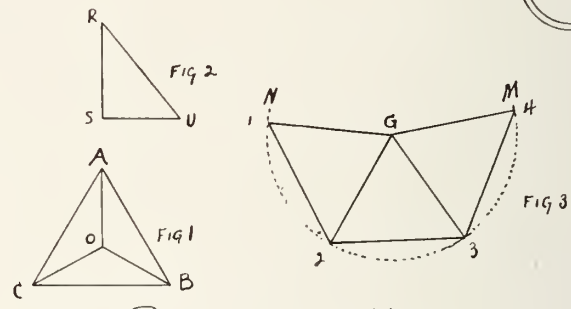
Then a line drawn from R to U gives the desired length of the hip.

Set the compass to this space and with either R or G as a centre describe the arc N M, and lay off on this the sides of the triangle. The total distance around any straight-sided figure is called its "perimeter."

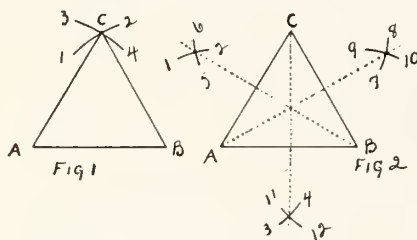
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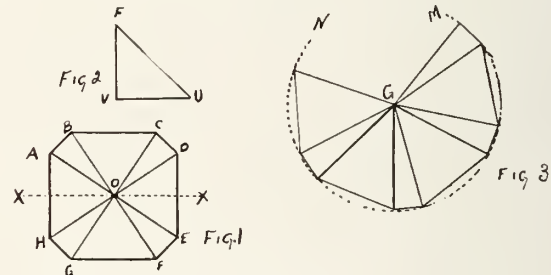
PROBLEM 10



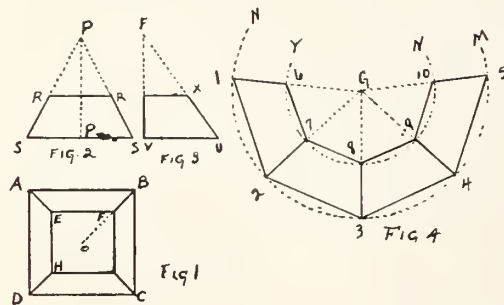
PROBLEM 11



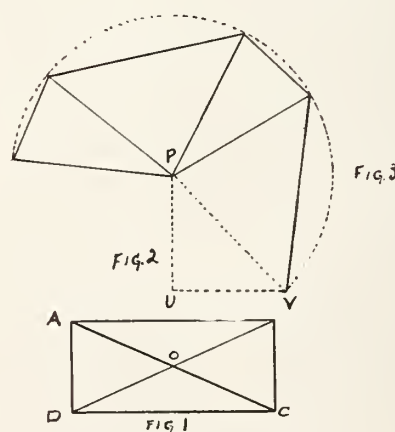
PROBLEM 12



PROBLEM 13



PROBLEM 14



PROBLEM 15

# Tips for Helpers---By "Phoenix"

In this day of specialists it is rather the common thing to sneer at the all-around man, i. e., the man who can do plumbing, heating and gas fitting. To my mind, he has a better chance to acquire knowledge (provided he is in a small town or small city) than in days gone by. In past days the plumber had much lead work to do. Today, on the contrary, he does very little lead work. I am not contending but that it takes time to learn both trades—and as for gas fitting, it has mostly come to be a thing of the past so far as the plumber is concerned, as the gas companies have practically "swiped" the whole gas business. So, if I were a boy again to, day, in the light of what I now know of the gas business I'd give it very little attention. In a small town or city, it is almost absolutely necessary that the mechanic know both plumbing and heating if he expects to hold his job any longer than the rush season and the work as done in these small places is not so very difficult. I do not mean by that to speak of the work in a slighting manner—only that it generally has its limits as to size. It couldn't well be otherwise. You'd hardly expect to find a LaSalle Hotel or Singer building in Squeedunk or Sleepy Hollow. There are exceptions however, such as the huge summer—or rather, winter—hotels built in winter resorts down south. These places are fitted up with the very latest in the plumbing and heating lines. In such cases, however, the main bunch of workmen, (plumbers and fitters) are generally imported from the northern cities staying on the job for several weeks or months



Figure 1.

until it is completed. On one such job I know of something like 100 fitters and plumbers were taken from New York and Chicago way down south to Dixie and stayed there for five months. Such an occasion brings a little variation to the fitters and plumbers usual hum-drum life, and such chances are most eagerly snapped up by those who can "deliver the goods" in the way of workmanship. On such jobs as mentioned, the pay is good, ranging from \$4.50 to \$6.50 or more per day for the men and from \$7.00 to \$10.00 a day for the foreman. Generally the fare is paid and in certain cases some of the workmen may get their board paid, but not always. It depends on who you are and what you can do and also your stand in with the company doing the work. In this article I want to call your attention, my young helper friend, to two very common errors, easily made, carelessly or uselessly made, and two errors which produce very bad results at times. Any plumber's helper who has been six weeks at the business and who has had a chance to work on half a dozen or more of such plumbing jobs ought to know better than to install work as it is shown in figures one and two, illustrated in this article.

But, all the same, you'll run against work done just like this, at times, all over the country. Sometimes it is ignorance, but more times just carelessness. Again, a plumber can save the price of a draw off faucet and, from greed, he does so.

Take figure one for instance. This shows a range boiler connected to a small heater. In such cases the range boiler is generally larger than could be heated with the usual water front or coil in a cooking stove. Now, as far as the manner of running the pipes between the boiler and stove is concerned, they are all right. This job will work all right and furnish plenty of hot water **until the lower pipe gets stopped up with mud and sediment.** Then there will be the deuce to pay. Simply because the plumber was too careless, ignorant or selfish to put on a draw-off cock under the range boiler, and use a "tee" instead of an "ell," as shown in the illustration. It would have made a difference of perhaps one dollar in the price of the job and when it becomes necessary to do the job it will cost anywhere from \$2.50 to \$3.50 to do the job over and make good on what the plumber should have done in the first place. I have

preached on inefficiency and carelessness in past articles and shall talk some more in articles to come. Take the second instance as shown in figure 2. In this case the plumber has, fortunately, been thoughtful enough to put on a draw-off or sediment cock. The boiler, as connected to the water front, should, if not too

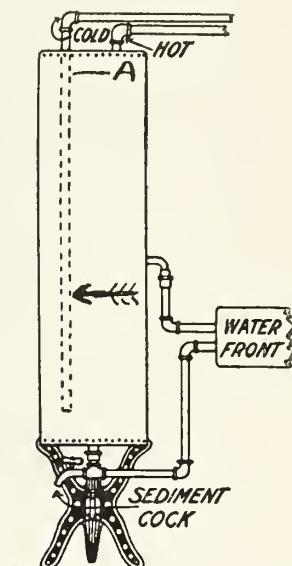


Figure 2.

large for the front, furnish plenty of hot water on all occasions when there is a fire in the stove. Boilers are installed like this from Halifax to Havana; from New Orleans to Frisco. Some plumbers think that the nearer the bottom of the range boiler they can get the cold water feed pipe inside the boiler, the better, and safer the job will be. Now this is a great mistake and that cold water feed pipe inside the boiler as shown is just about one foot too long in actual practice and should have been cut off to a length that would have made the end terminate about where the elbow is shown in the illustration. This would allow the hot water to feed equally well and, in case the safety hole in the feed pipe at point "A" ever becomes stopped up, the water front can never be drained through siphonage as the end of the cold water feed pipe is at or above the top line of the water front. In the other instance, the water front could have been completely drained and should cold water be admitted when the front was hot, an explosion producing disastrous results would undoubtedly have been the result. It pays to watch small points and to know what points to look out for.



## Gossip of the Trade

### Plenty of Work Here.

The growth of Toronto may be gathered from the records of the city plumbing department. Last month there were 2,882 applicants for inspection of plumbing work, which is an increase of 23 per cent. over that of June, 1911. There were 1,005 permits issued, which is an increase of 59 per cent, and there were 2,252 smoke tests made, which is an increase of 95 per cent. over June last year.

### Smaller Fee.

A reduction is to be made in the cost of permits for plumbing work if a recommendation to the Vancouver council from the commissioners is carried through on Monday night:

"On the suggestion of the plumbing inspector, and after consideration of the same, the commissioners are of the opinion that the by-law should be amended in the matter of cost of permits. The by-law at present reads: 'A fee of one dollar will be charged for each permit up to twenty outlets, and an additional charge of 5c for each and every outlet above said twenty outlets, mere openings not included.' This means that one could receive a permit for \$1.00 for the installation of 20 outlets, and the person requiring but two outlets would be called upon to pay the same amount. The plumbing inspector is of the opinion, and we concur in the same, that the fee should be 50c for each permit up to 10 outlets, and an additional charge of 5c for each outlet above the said 10 outlets, metre openings not included. We beg to submit by-law for your consideration at this meeting."

### LEAKING WALL RADIATORS.

Editor Plumber and Steamfitter.—I have several wall radiators from eight to twelve sections long and they are always leaking. Can you tell me the cause and how to remedy it?

P. H. R.

Though you have not given us very much to draw to in the way of information we should say, speaking generally, that the radiators were not properly hung on the walls. Insufficient bracing, or rather lack of enough hangers undoubtedly puts too much strain on the radiators and causes them to leak as you say. We would suggest that you hang these radiators so that there would be no tendency for them to sag at any point and if this does not do



## Delegates Who Saw Regina's Ruins

away with their leaking the best thing you can then do is to break them up into smaller sections. Instead of using one 12-section, make use of three 4-section radiators and we are sure that your troubles will be done away with.—D. C. H.

### DELEGATES WHO SAW REGINA'S RUINS.

Smith & Potts, of Regina, suffered heavily by the cyclone which wrought destruction in the Saskatchewan capital early in the summer. Like so many of their fellow citizens, however, they were merely bent, not broken; and when the convention delegates were in Regina they showed a number over the city—pointing out among other things the lot upon which Mr. Potts' house had stood.

This snap, taken by W. Millar, of Fort William, shows some of the delegates who inspected the ruins. From left to right are shown, Messrs. Smith, Regina; Higginbotham, Fort William; Millar, Fort William; Potts, Regina; Walsh, Montreal.

### CUTTING CROOKED THREADS.

Editor Plumber and Steamfitter.—I don't seem to have very good success when I want to cut a crooked thread. Will you describe the way of so doing in

your questions and answers which I read each number with interest?

T. G. Claney.

Suppose you want to cut a crooked thread on a one-inch pipe? Put the inch and a quarter follower in the stocks and cut the thread, seeing that one side of the follower hits the pipe as you start out. You can put a wedge in if you want to and, with a little practice, soon be able to cut any "crook" to the thread you may wish.—D. C. H.

### DIES DO NOT ACT RIGHT.

Editor Plumber and Steamfitter.—I got a set of dies not long ago, and it seems to be necessary to use considerable force to get them to "take hold" in the pipe. Is this regular?

M. E. Canning.

Perhaps your are in too great haste to cut the pipe and thus make a bur on the end of the pipe from using a three-wheel cutter too vigorously. If such is the case most any dies would not catch readily according to our experience. Either rasp down the cut or use a one-wheel cutter. If the dies do not then "catch" easily and without much force you can conclude that there are others on the market that will. A good die should draw on to the pipe so easily that a boy 12 to 14 years of age could catch it and cut the thread too, at least up to 1½ inch pipe.—D.C.H.

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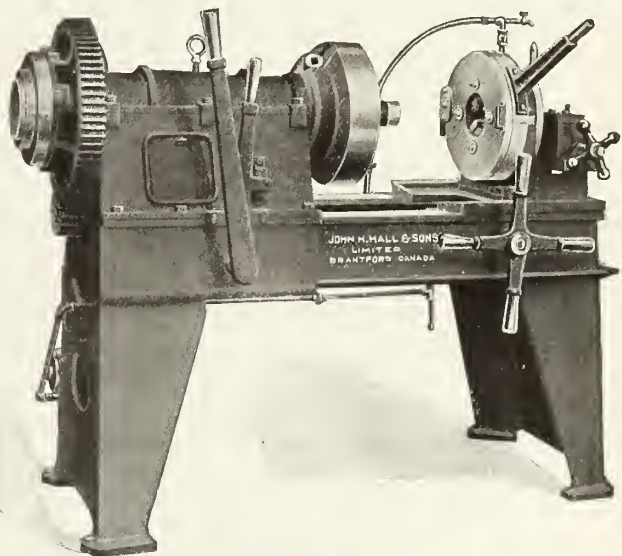
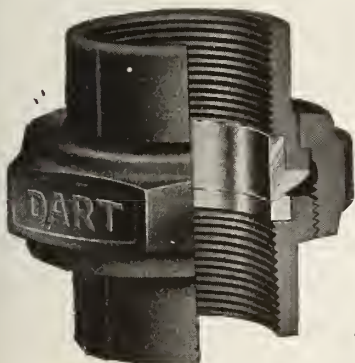
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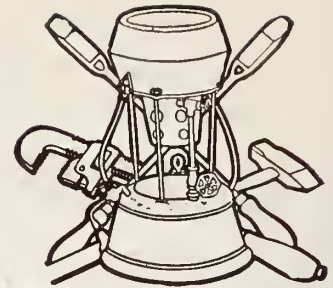
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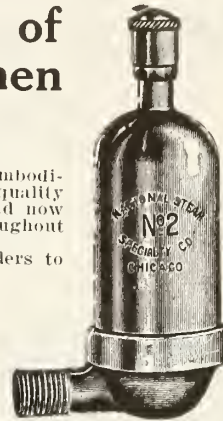
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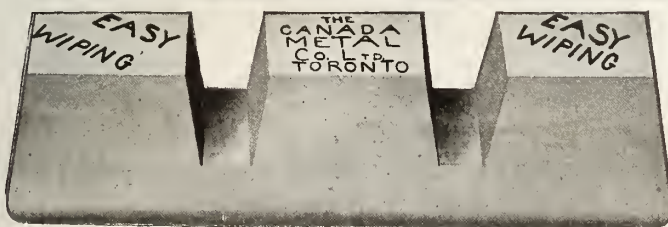
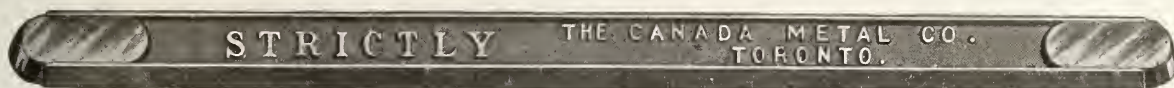
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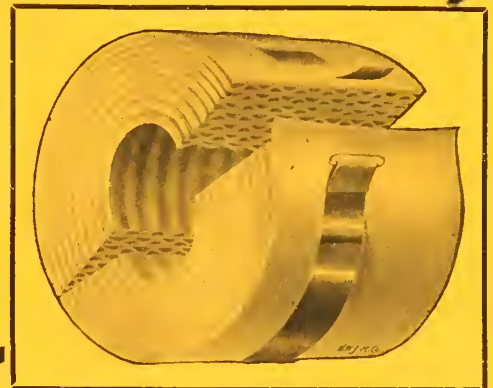
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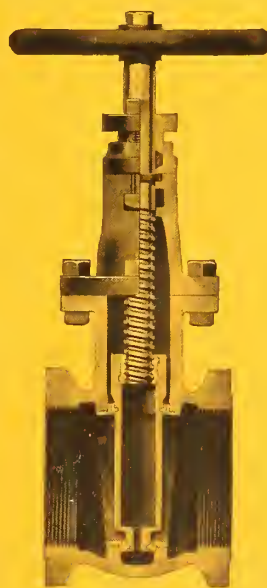


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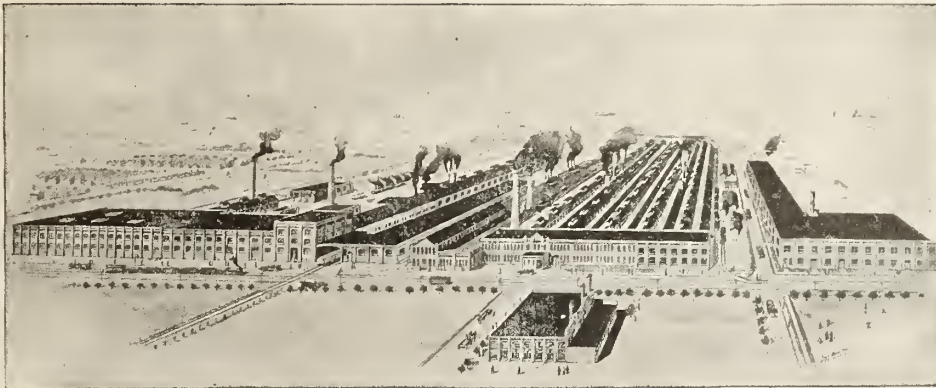
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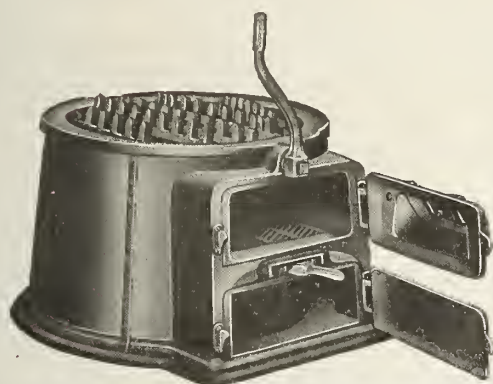
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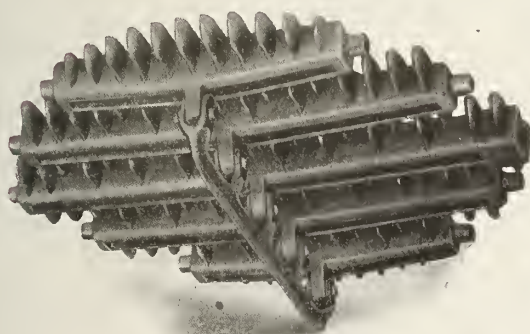
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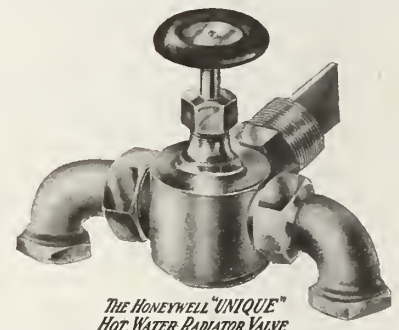
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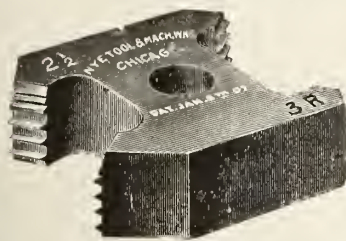
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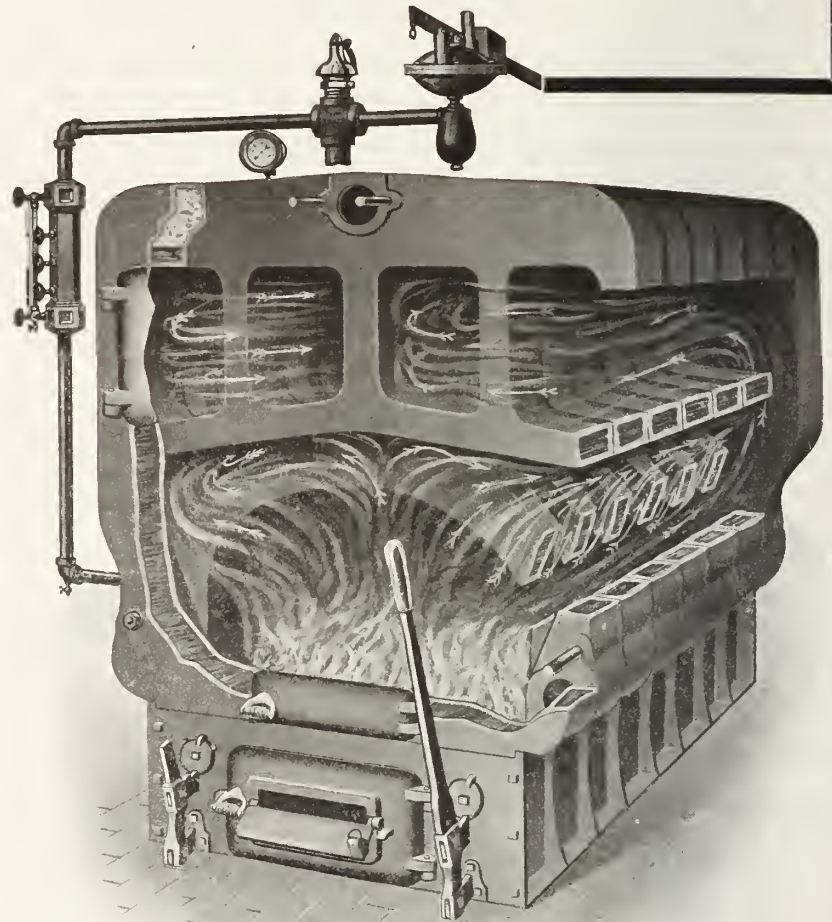
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# Central Heating Plant of University

A Brief Description of System Which Heats Many Buildings — The Material Used in Installing System.

THE following address was read by J. M. Stannard at the semi-annual meeting of the American Society of Heating and Ventilating Engineers at Detroit:

The heating and ventilating of the Northwestern University buildings, at Evanston, Ill., are accomplished by hot-water forced circulation, and direct and indirect steam plants under both vacuum and gravity methods. The accompanying map shows the various buildings with the method of heating in each, the location of power plant and the size and location of feed mains.

The boiler plant consists of six boilers, four for the generation of steam and two for the reheating of the hot water. Two of the steam boilers are of the horizontal return tubular type, size 72 in. by 18 ft., each rated 150 h.p., and having grates 5 x 6 ft. The other two steam boilers are Sterling water-tube boilers, each rated at 250 h.p., and having grates 8 x 6 ft. The two boilers for the hot water heat are of the horizontal return tubular type, size 66 in. x 16 ft., each rated 125 h.p., and having a grate surface 5 x 5 ft. The water-tube

boilers are equipped with Green traveling chain grates and the four fire tube

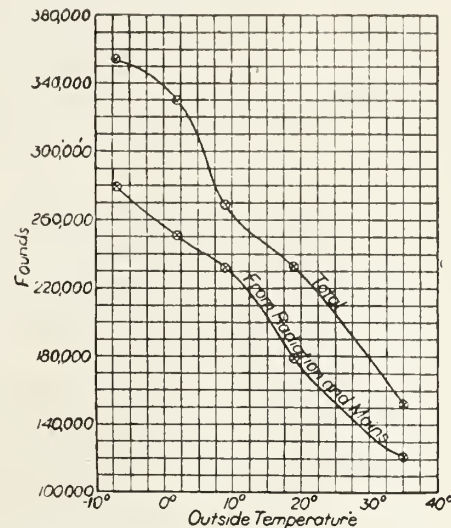
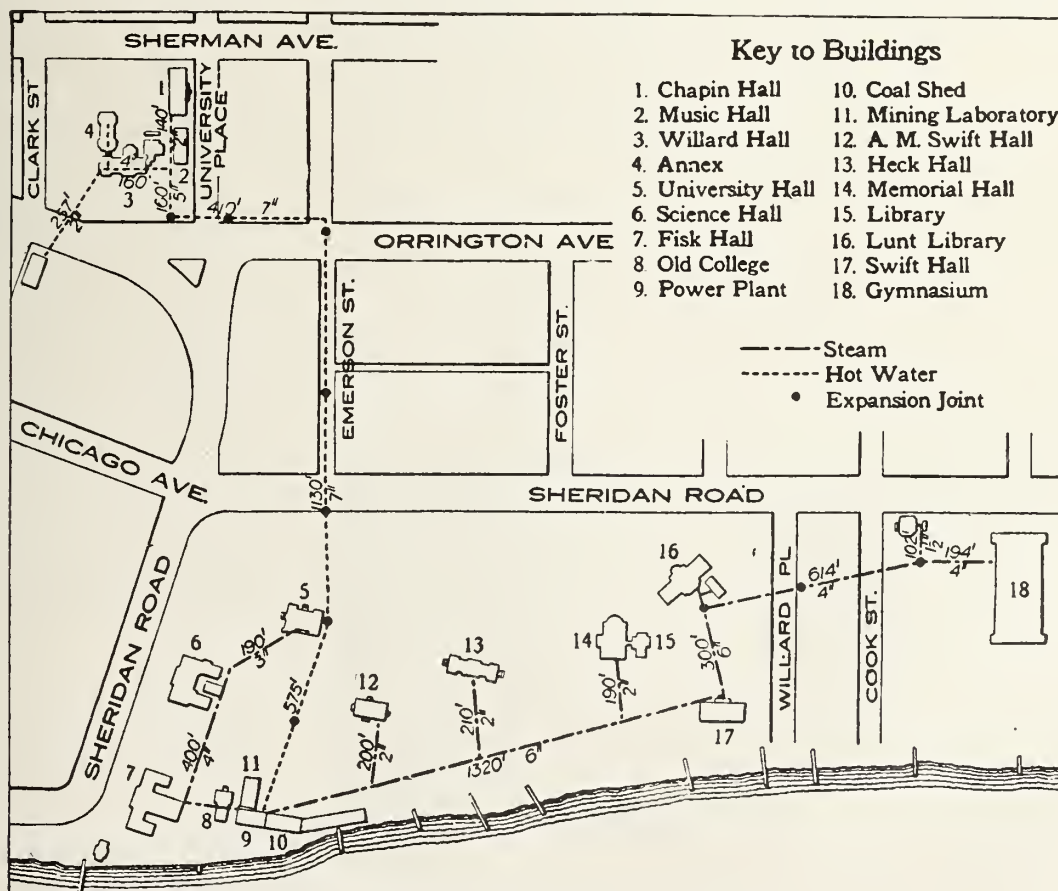


Chart showing Condensation in the steam system in 24 hours.

type are hand fired. The steam boilers are fed with water from a 600-h.p. Cochrane open feed-water heater by two duplicate Worthington duplex 6 x 4 x 6-

in. pumps. During the more moderate cold weather only one of the hot water boilers is fired for the reheating of water, and two of the boilers are fired for the generation of steam. The steam boilers besides furnishing steam to the radiation also supply steam for the operation of circulating and vacuum pumps and one fan engine, which drives the fan for the inducted draft system, as this method is used in the plant rather than natural draft. The fan for inducted draft is of the Sturtevant make. It is 72 in. in diameter, and is driven at an average of 2.80 r.p.m. by a 10 h.p. engine, direct connected to it. Coal and ashes are handled by a hand car conveyor.

For the circulation of the hot water there are installed two Marsh single-cylinder double-acting circulating pumps, size 10x12x12, each having a theoretical capacity of 5.87 gal. per single stroke. Both pumps are equipped with Hill pump vases to reduce slippage to a minimum. These pumps are equipped with modern revolution counters so that an accurate record of the water pumped may be kept. There is



Map of buildings, Northwestern University.



## PLUMBER AND STEAMFITTER

one large closed heater having 396 sq. ft. of heating surface made up of brass tubes. This heater is used in addition to the two hand-fired boilers for reheating the circulation water for the hot-water system. This heater was installed to utilize the exhaust steam from the various pumps and stoker and fan engines. In this manner no exhaust steam whatever is wasted.

Three Marsh vacuum pumps, one size 8x12x12 in., and the two each 5x6½ x 10 in., are installed in the pump room and are used for holding vacuum on the steam-heating return lines and for handling the condensation from this system.

The hot-water system is equipped with a complete set of recording thermometers which show temperatures of outgoing and return water and outside temperature. In addition to the recording instruments there are regular thermometers on the heater and on the return line.

The steam-heating system consists principally of direct radiation supplemented with indirect in three of the larger buildings. The indirect radiation is for ventilating purposes, there being sufficient direct radiation installed for heating only. Steam is generated in the boilers at a pressure of 80 lb., and is reduced in the power plant to 40 lb., at which pressure it is distributed to the various buildings, twelve in number. One to 5 lb. pressure is carried in the direct radiation and blast coils as weather conditions require, and it is maintained by proper size reducing valves located in each individual building. Belvac thermofier float-type vacuum traps are applied to both direct and indirect radiation in two of the buildings, Swift Engineering Hall and Patton Gymnasium.

The pumps at power plant maintain a vacuum averaging about 10 in., which drops to 2 to 3 in. at the point where the return lines are connected into two return mains which lead back to the power plant and are connected through settling chambers to the vacuum pumps in the usual manner. The condensation is then delivered by the vacuum pumps to a receiving tank from which it is delivered by gravity to a feed-water heater and from there is taken by the boiler feed pump and returned to the boilers.

The buildings on the forced circulation hot-water system are heated with direct radiation only. Temperatures and volume of circulation are regulated from the power plant according to the accompanying temperature chart.

The supply and return mains on the hot-water system are 7 in. in size to a point midway between Emerson street and University place; 5 in. from this point to the manhole at the Music Hall,

running 4 in. into Willard Hall and 2 in. to Pearson Hall, with a 2-in. line to Chapin Hall. These lines are run in a special conduit, the bottom of which is made of book tile, used for drain, covered with concrete. The pipes are covered with one thickness of high-pressure covering and a split sewer tile is placed on the top and well cemented. Expansion joints are placed at regular intervals. The expansion of water is taken care of by an expansion tank placed in University Hall. The total amount of hot-water radiation at the present time is 17,000 sq. ft.

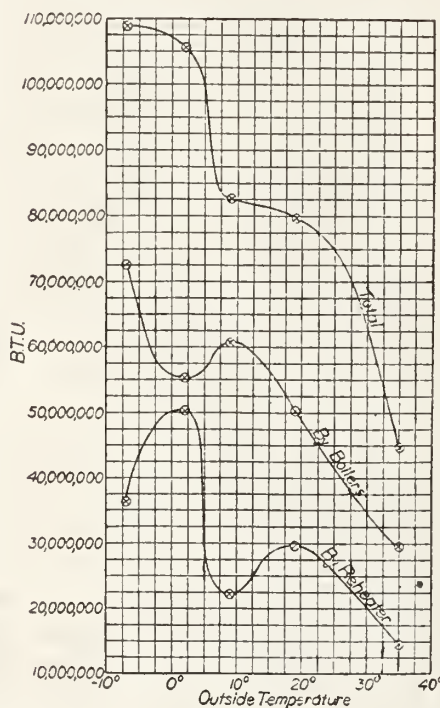


Chart showing amount of heat added to the hot water system in 24 hours.

### Hot Water Temperatures for Different Outside Conditions.

Outside Temp.	Ordinary		High wind	
	Flow	Return	Flow	Return
60	115	95	125	100
50	120	100	130	105
40	130	105	140	110
35	135	110	145	115
30	140	115	150	120
25	145	120	155	125
20	152	125	162	130
15	158	130	168	135
10	165	132	175	137
5	173	135	183	140
0	181	140	191	145
-5	190	143	200	148
-10	200	150	210	155
-15	210	155		

For the steam system the size of distributing mains are as follows:—One 6-in. main for north buildings extending this size to a point between Swift Engineering Hall and Lunt Library through a 6 ft. concrete tunnel and 4 in. from

this point to Patton Gymnasium in a wood conduit. The total load on this north line is equivalent to 36,637 sq. ft. of direct radiation. In addition, this line supplies heat for a hot water tank for shower baths and the swimming pool, which contains 66,000 gals. of water. A 5-in. line in a brick tunnel carries steam to the south buildings reducing at Science Hall to 3 in. for University Hall. The total load on this main is equivalent to 18,443 sq. ft. of direct radiation.

Branch lines are taken from these mains to individual buildings. The return lines are run parallel to the feed mains and are 3 in. in size at the power house. One of the interesting features is the fact that the main return line at Patton Gymnasium is approximately 5 ft. below the high part of the tunnel near Swift Engineering Hall. The expansion of both supply and return mains is taken care of by slip expansion joints securely anchored at regular intervals.

Feed mains in tunnel are covered with two thickness of 1 inch each of sponge felt covering. Return mains are covered with one thickness of low-pressure covering. Feed mains in the conduit are covered with one thickness of high-pressure covering, and packed together with uncovered return mains in oil shavings in a special wood boxing. The north supply main is dripped at Swift Engineering Hall, Lunt Library and Patton Gymnasium back into return line through traps. The south main is dripped at Fisk Hall and University Hall in a like manner.

All direct radiation in the buildings heated by steam is controlled by the Johnson system of temperature control, and bypass dampers in fan-ventilating systems are similarly controlled. For economical operation it was found by experience absolutely necessary that this temperature control be installed.



### WHICH KIND OF JOINT?

Editor Plumber and Steamfitter. — Is a push nipple or screw nipple better as a joint? Which?

Fitter.

This question has been very much in dispute each side having its adherents. We believe that on either side many points of advantage can be stated and that, in certain cases, each kind of joint will make good when the other would not do as well. You must suit the particular nipple construction to the needs of the occasion it seems to us.—D.C.H.



# Some Lights on Price Cutting Problem

An Instance Which Shows What is Going on in the Trade—How One Sanitary Engineer Figures on Contract Work—Something About the Right Method of Figuring.

**D**ESPITE all that has been said, despite all that has been done, price cutting is still the prime evil of the sanitary trade. There are some places in Canada where price cutting is not known but these blessed oases in the profitless desert of price lunacy are few and far between. In most cities and towns the evil exists unchecked.

It is really remarkable what feats of close figuring, the chronic price cutter can perform. The following case occurred in Toronto recently. A certain sanitary engineer was asked by a friend to put a price on the plumbing work in a new double-house that the friend was building. For friendship sake the engineer figured out exactly what it would cost him to do the job and added a few dollars to cover unforeseen expenses. It was a strictly rock-bottom price, a "friendship" price. We do not recollect just what the figure was, but it was close in the neighborhood of \$200. A few days after the friend met the engineer and in a rather shamefaced way remarked: "Look here,—there's a plumber lives just around the corner from me who heard that I was building and who offered to do the work for \$150." "Take it," said the engineer. "Don't miss such a snap. But you had better let me inspect the work before you settle up."

The job went to the price cutter and he did a good piece of work. The first sanitary engineer went over the job carefully and could not find any respect in which the work had been skimmed.

## Had Lost Money.

The raw cost of the material for this job was \$152—at least that was the total figured by the first man. As the second man had not cheapened the job, it is altogether likely that he paid \$152 to the supply house. He had done the work himself and it had taken him about two solid weeks. Therefore, he had worked two weeks for nothing and handed over \$2 for the privilege of doing so.

This man was very busy at the time. He had more work than he could attend to. Was it any wonder? It is not difficult to get work when no profit is charged.

Getting right down to hard pan, this man would be better off working as a journeyman and pulling down his regular wage. He would make more money and be free of all worry.

The writer was very much astonished the other day in discussing the question of price cutting with a number of substantial sanitary engineers to find that

they follow a system in figuring which verges so closely on profit cutting that there is hardly any distinguishing the two. For instance, it was found that they all figured in as cost of material the price paid by them to the supply house. To that they added the cost of labor and then put on 10 per cent. for profit.

"But what about overhead expenses?" was asked.

"That has to be provided for out of the 10 per cent.," said one man.

"But 10 per cent. won't cover your expenses. Just let's figure it out."

A little figuring was done and it was found that the man's expenses roughly speaking came to about 13 per cent. This did not include a salary for himself.

"What you should do," we urged, "is to total the cost of material and labor, and then add 15 per cent. to cover the cost of doing business. That will clear you and anything you add for profit will come back to you, but none of the rest will. You should add 10 per cent. for profit."

"If I did that, I wouldn't get one job a year," protested the man.

"What did you make last year?"

"I kept up my home and saved \$500."

"Didn't you have enough jobbing work to do to account for the total amount you took out of the business?"

"Yes, perhaps a little more."

"Then you lost money on your contract work."

"I guess that's the way it sizes up. Of course, I always take my 2 off each month. That helps some."

This man is making a good living and saving a little money, but he is working hard and is subjected to a great deal of worry as a result of his walking so closely to the line which lies between profit

and loss. It is strenuous work, running a business and making a profit on a 10 per cent. margin.

It has been dealt with so often that repetition here may sound trite. Nevertheless, we desire to point out that the cost of doing business on an average is about 16 per cent. of the total year's turnover. This includes rent, taxes, light, heat, delivery and so on. This percentage should invariably be added on in figuring a job. If it is felt that the price will be too high when this percentage is allowed, better let the job go.

Some men follow out a different system. They add in so much for cartage, so much for car fare, etc., on each job. In other words, they make individual charges. Under this system they do not, of course, allow anything for light, heat, rent and similar charges. The result is that the job is invariably done too cheaply.



## FIGURING RADIATION.

Editor, Plumber and Steamfitter:—When figuring on heating a building of several storeys by an overhead system, would it be right to figure all the stories at the same strength, or amount, or would you make different allowances?—W.E.J.

We believe that we should figure some of the floors differently. The top floor on account of its greater exposure would loose heat faster and require a greater amount of radiation than some of the other floors. The first floor, on account of receiving the heat last, would need more radiation because it gets the heat at a less temperature. To figure the matter accurately we should have to have the exposure, location, altitude, make of boiler and plans of the building.—D.C.H.



A view of the office and showroom of Geo Ross, of Brockville—Mr. Ross is one of the foremost members of the Ontario Society of D.S. & H.E.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, SEPTEMBER 16, 1912

IT MIGHT as well be recognized that Canada is in for a period of high metals. Tin is up. Copper is up. Lead is up and going up still. Iron is up, and it is freely predicted that it will keep going up. Nor is the present movement altogether due to syndicates or other speculative interests. In this respect it is worth while quoting the opinion of a United States contemporary.

### HIGH PRICES IN METALS

"It is well for consumers to remember that there is a decided difference between the high tin prices of last year and the present. Last year's prices were caused by a cornered situation in London, which at one time put the price of spot tin over £40 over the price of three months tin. The present advance is not caused by any corner conditions, but is simply a buying movement backing the statistical position. It will be noticed that both spot and future deliveries continue to advance side by side. It is also interesting to note that the price of spot tin to-day is at the highest on record except for the June (1911) corner."

What is true of tin is also largely true of other metals. The strike troubles are not altogether responsible for high lead. More is needed than has been needed for some years.

Iron, too, is in demand. The call for pipe has been tremendous. Other products are being sought eagerly. To get the necessary pig is becoming more and more a problem. Naturally, then, iron and its products will rise.

The upward movement will give a further impetus to those who shout about the high cost of living. But it will not bring hard times. Quite the reverse. When high prices are largely caused by a heavy demand those high prices are healthy.



REGARDING the question of standardizing of sanitary and heating material, Domestic Engineering says:—"Progress is not only the law of life but also of trade. That this is so is affirmed by several steps of progress recently made in the plumbing and heating trades of this country. We refer to the standardization of plumbing and heating materials. It will probably not be amiss to recount some of the most noteworthy actions, which have been taken along this line

during the last few months, because time spent in consideration and appreciation of what has been accomplished may be the means of spurring the leaders on to further endeavors for the betterment and the general welfare of the plumbing and heating trades.

To mention only what has happened so far in the year 1912, it is of vital interest to note that "The 1912 U. S. Standard Schedules of Standard Flanges for Steam Pressures up to 125 lb. per square inch, and of Extra Heavy Flanges for Extra Heavy Fittings and Valves for Steam Pressures from 125 to 250 lb. per square inch" went into effect May 1, 1912. These schedules were adopted by a committee of the National Association of Master Steam and Hot Water Fitters on October 25, 1911, and by the American Society of Heating and Ventilating Engineers on January 25, 1912, and they have also been adopted by the American Society of Mechanical Engineers. Every heating engineer and contractor knows the value of getting uniform supplies, and he can now secure these in this line, if he will take the trouble to specify that all flanged work shall be in accordance with "The 1912 U. S. Standard" Schedule of Standard Weights and Extra Heavy Flanged Fittings and Flanges.

The National Association of Brass Manufacturers adopted a uniform standard for basin cock shanks of 2 1/4 inch at its summer meeting in Detroit on June 11, 1912. This is another step in the right direction which will be a convenience to every plumber.

Exactly one month later, namely, on July 11, 1912, the National Committee of the Confederated Supply Associations at a meeting in Atlantic City, N.J., adopted what will be known as the "Naco" Standard for Extra Heavy Soil Pipe and Fittings, based on the report of the Standardization Committee of the above organization. That this also is a step of utmost importance and benefit to the plumbing trade is self-evident.

The men who have given their time and thought to the solving of these problems deserve the hearty appreciation of the trades benefited by their labors.

That so much has been done in the space of a few months augurs well for the future. Much remains to be done. Many lines of plumbing and heating goods need standardizing. But a good beginning has been made, and here is hoping that the days may soon come, when the remaining problems shall be solved



# Newest Bath--Some of its Deficiencies

The following amusing skit on the possible evolution of the bath-tub appeared in the "Ironmonger," a contribution from the pen of "Mid-Victorian:"

I was very pleased to observe by your issue of August 10 that even the Ironmonger can take on a holiday tinge, and I hope you will allow me to say, Mr. Editor, that the dissertations of your contributor "Vulcan" on local taxation, celluloid, kleptomania, and baths were wholly delightful. But I could wish I was quite clear about the bedroom bath which "Vulcan" has foreshadowed all out of his own head. It is very handsome of him to "make a present of the idea to your bath-manufacturing subscribers," but although I cannot honestly say I am a bath manufacturer, still I am a person who is greatly interested in baths. I am the head of the house also, but I never get the chance "Vulcan" mentions of "monopolizing the apartment just when everybody else wants to use it." To begin with, I don't get out of bed early enough. By the time my turn comes round "everybody else" has used the "apartment"—which, in passing, is a most elegant term for a bathroom—and it is in a dreadful state of suds, slops, and damp towels. If, therefore, the personal or bedroom bath described by "Vulcan" is a feasible thing, I shall become independent of "everybody else" in the house, and the "apartment" as far as I am concerned can be closed for ever. But with the best will in the world, and in spite of my eagerness to understand, I cannot clearly figure forth "Vulcan's" idea.

Mind you, Mr. Editor, I am not casting any blame on "Vulcan"; I believe I have before confessed to you that I am deficient in what is called the faculty of visualising, and struggle as I may I cannot form any clear conception of your contributor's suggested bath. Here is his description: "What is wanted is a circular, shallow, portable bath provided with a tubular framework carried up shoulder high, with a waterproof sheeting surround or screen." Now, Sir, bracing myself to the effort of comprehension, I take it that "circular" means round; shallow, of course, is not deep, and portable means easily carried. So that out of the gloom emerges a round pan with low sides sitting on the floor. But I can't see how big it is. Can you, Sir? Pans are of all sizes, and even large pans are portable. Suppose just for a start we assume a pan of 2ft. diameter. "Vulcan" now tells us this 2ft. pan is to be provided with a tubular framework carried up shoulder high, which is the

well established limit of decency. Very well; round the sides of the pan at regular distances let us set up eight tubular rods the height of the shoulder. Obviously the thing is a pan no more—what it looks like at this stage I leave you to say, while I proceed to fix somehow on the tops of those tubular rods a piece of waterproof sheeting reaching to the floor. We have now fashioned a circular, perpendicular cavity 2 ft. in diameter, which unless we have gone astray somewhere is a portable bath.

Now, Mr. Editor, would you please get into that bath? Or suppose you and I join and ask "Vulcan" to get into it. I don't imagine he is more than 2 ft. across when he does get into it; but how is he to get in? He can't creep between the upright tubular bars, because if the diameter of the foundation pan is 2 ft. the circumference will be about 6 ft. 8 in., and eight equidistant tubular rods round the sides will only leave an opening of 10 in. There are portions of my person—and presumably of "Vulcan's"—that could not by any possibility be squeezed through this space.

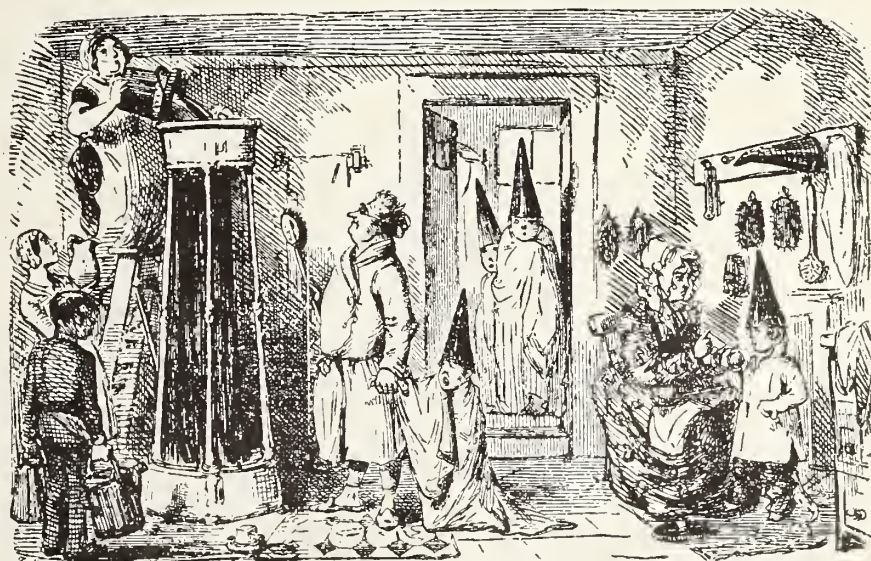
But let us assume that "Vulcan" has climbed up on three superposed chairs and dropped down inside his bath safely. Of course, you can't have a bath without water. I must be fair to "Vulcan" and admit that he foresaw that. So that I may not go wrong I quote his own words: "Provided with such a device the occupants of a bedroom could obtain a satisfactory wash with half a gallon of hot or cold water at any desired time." Naturally, if the water were already in

the pan when "Vulcan" dropped down, there would be an uncomfortable splash; so we will imagine him standing dry inside the waterproof supported on its tubular framework, and we lift the sheeting at the bottom and pour the half-gallon of hot water over his feet. It will make him stand on tiptoe for a bit; but I don't see how that is to be avoided. But what really troubles me at this point is: what show will half a gallon of water make in a 2 ft. circular pan? Does "Vulcan" know how much half a gallon is, Sir? Just let him think it out in beer. It is no more than ten glasses—an utterly contemptible quantity for ablutions, however satisfactory it might be as a beverage.

Certainly half a gallon of water would be more satisfactory in a 1 ft. circular pan, but you will see presently that you must not reduce the diameter of the pan and waterproof screen. For just call before your eyes in imagination the figure of "Vulcan" standing erect within the 2 ft. portable circular bath, with half a gallon, or even a whole gallon, of water at his feet, and a sponge in his hand. How in the world is he to bend within a tubular space of 2 ft. diameter? Either his head or something else must stick in the waterproof screen. How is he to get at the water to wash himself?

I tell you, Sir, I have struggled with this problem between the appearance of your last issue and now, and the more I struggle the more difficult I find it to get "Vulcan" into that portable circular

Concluded on page 17.



This cartoon from the pen of Leech, appeared in "Punch's Almanack," in 1850. It seems to be somewhat along the line of "Vulcan's" idea. Will it ever come to this?





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## ASBESTOS WILL NOT STICK.

Editor, Plumber and Steamfitter:—I got my steam job done all right and then covered the boiler. When I built a fire to test out, the asbestos bulged all up and in some places it dropped off. Will you tell me how to fix it so it will stay

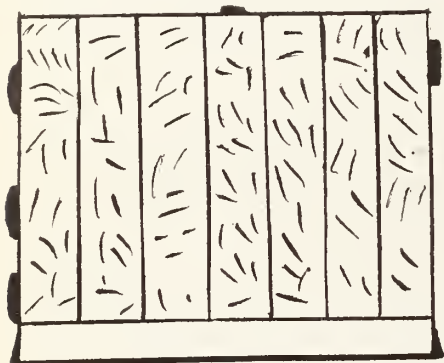


Fig. 1.

put where it is placed? I put it on all at once and made a smooth, good-looking job of it.—G.M.C.

If you had waited long enough for the asbestos to dry out thoroughly it would not have acted as you say it did. As this takes several days, most people prefer to put it on in two or three coats while the boiler is hot. In order to do this successfully, some way must be provided for the steam to escape or it will gather in places and burst out, thus making the bulges you speak of which are nothing more or less than places where the steam

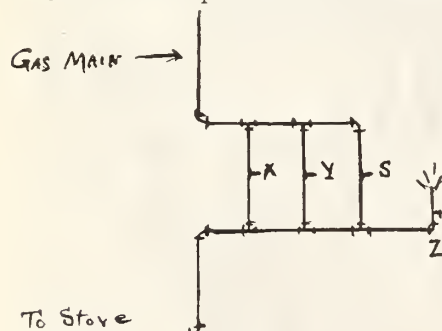


Fig. 2.

has lifted the asbestos clear of the iron. We show a cut of the boiler covered with asbestos and "slashed" in many places with the trowel. This gives free exit for the steam to escape and leave the asbestos where it was placed. It does not

matter how rough or unsightly this coat may look, if put on in a uniform thickness of about 1½ inches, for the last, or finishing coat will make a smooth job of it. Mix a little Portland cement in the finishing coat and it will be much firmer. Before using the asbestos, it should be mixed, quite wet, and stand for at least 24 hours before using, as it handles much better so, that if mixed and put on at once.—D.C.H.

## WANTS LAUNDRY GAS CONNECTIONS.

Editor, Plumber and Steamfitter:—I have got a three flat gas connection to put in. A gas stove and gas jet must be put in so that each tenant can use the light and stove independently. Will you show a drawing for it in the next copy of the paper?—J. C. Scanlon.

We show a drawing (Fig. 2.) The three tenants are represented by letters "X, Y & S." "Z is the light and gas main in cellar and pipe to the gas stove are shown. The valves at "X, Y & S" may be locked, and each tenant can use both the stove and light without drawing on the other tenants' meters which may be set in another part of the cellar.—D.C.H.

## TARNISHED NICKEL WORK.

Editor, Plumber and Steamfitter:—Very frequently I run across bibbs and pipes that are quite badly tarnished and of course they are an eye sore in any bathroom. Now can you tell me of any way in which these pipes can be cleaned so that they will look better? If so, I should be very glad to learn what it is.—S.M.S.

If the pipes, bibbs, etc., have been well nicked in the first place, it is stated that a good preparation to use in cleaning the nickel work is made by mixing alcohol with about two per cent of sulphuric acid and rubbing the nickel quite briskly with the solution. After the pipes have been so rubbed, they should be thoroughly washed with clear water and then rubbed dry with a soft cloth, when they will look much better and undoubtedly not tarnish again for some time.—D.C.H.

## SHORTSIGHTED HELPER.

Editor, Plumber and Steamfitter:—I sent one of the helpers out on a new job, as I was too rushed to go myself, and he

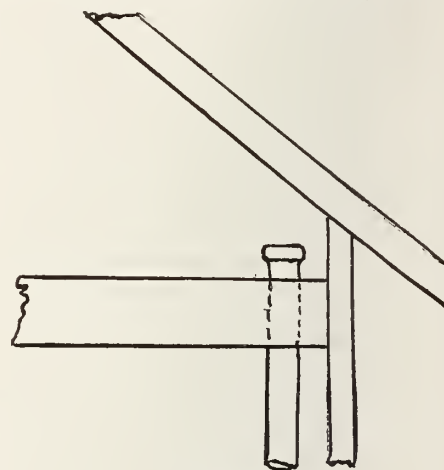


Fig. 3.

ran the stack right up almost against the side of the house in the attic and then left it. Would it be best to use 45 deg. elbows in getting out of the difficulty, or can you suggest a better plan? I am sending you a sketch with this letter and hope

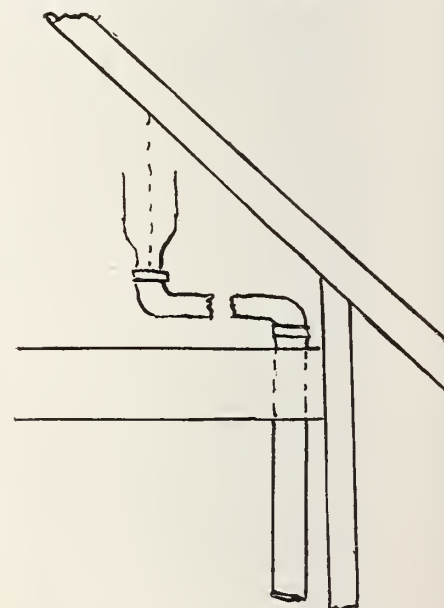


Fig. 4.

to see an answer in the next issue.—A. C. Cummings.

We show our correspondent's difficulty in Fig. 3 and believe that, from the am-



ount of room that seems to be available, an offset should be used long enough to give sufficient room to use an increaser (if the situation calls for same) as shown by our drawing in Fig. 4. From the centre of the outlet of the offset, looking up, you can plumb upward and get the right place to cut the hole in the roof through which the pipe can then be run to meet the proper needs.—D.C.H.

#### CHECK VALVE ON COLD WATER PIPES.

Editor, Plumber and Steamfitter:—Is it right to put a check valve on the cold water pipe of a house plumbing job?—R.E.C.

If you put on a check valve you should also put on some kind of a safety valve for unless you do, you have (by using the check valve only) stopped up the only means of expansion that the water has. Do not take this chance of

corking the job up tight unless you want something to break loose.—D.C.H.

#### HOW MUCH FALL ON DRAIN?

Editor, Plumber and Steamfitter:—Kindly tell me how much pitch or fall I should give the drain from the house to the main sewer?—"Drain Pipes."

Some of our best plumbers have told us that they have obtained very successful results by using a fall of one-quarter of an inch in one foot, although we have heard of cases where the fall has been considerably less than what is here stated.—D.C.H.

#### KEEPING THE CLOSET BOWL CLEAN.

Editor, Plumber and Steamfitter:—Can you tell me of any way to easily keep the closet bowl clean as, in many cases, they discolor very badly?—X.Y.Z.

Some of our plumber friends have told us that if a table spoonful of chloride of

lime be thrown in the bowl about once a week and left in for several hours, that the bowl will be kept clean where the water line reaches up to and that no washing or swabbing will be necessary.—D.C.H.

#### RADIATOR EFFICIENCY.

Editor Plumber and Steamfitter.—Banking on general results in the long run and in ordinary usages which form of radiators will give out more heat, tall radiators or short ones? In each case the radiators to have the same number of heating feet per radiator?

T. M. Sheldon.

We have looked up several authorities on this case and also asked our practical man his experience and find that it seems to be the opinion that in still air the short radiators would be more effective than the tall ones.—D. C. H.

## Framing Plumbing By-laws Without Plumber

**This is Practically What They are Doing in Montreal. P. C. Ogilvie, Representative of the Master Plumbers' Association, Having Been Left Off the Sub-Committee Which is Leisurely Doing the Work—More Delays Likely and New Regulations are Badly Needed.**

The ways of City Councils are passing strange, as all citizens of Detroit will be ready to admit. But one has not to go so far for an example of maladministration. In Montreal a rather glaring abuse is now to be noted—one, moreover, which closely touches the sanitary and heating engineers.

The city's building by-laws are in sorry plight. The annexation of several outlying districts has made the situation more involved. The building inspector has found his hands tied. He has made complaint—oh many times—and finally, a newer and better administration having dawned, some heed was taken. Council decided that new by-laws were to be drawn up. Council appointed a small sub-committee to attend to the work, this sub-committee being given power to add to its number.

#### A Long Delay.

All this was more than two years ago, yet still no new by-laws have been approved. Still the old, inadequate and often pernicious plumbing regulations prevail. It is a strange thing that the delay should be so long, at least it would be strange were it not a city's welfare which hangs in the balance. Men will urge haste where action is necessary for their own well being—but for a city, well that is a different matter.

The history of this case is well worth outlining briefly, for it is a history which

sanitary and heating engineers will wish to keep from recurring. The sub-committee of Council, as has been said, had power to add to its numbers. This power the sub-committee used. Its members decided that a representative from the master plumbers association should be elected, also a representative from the Builders Exchange, one from the Association of Architects, and so on. Members were appointed, and the committee as thus augmented met. What was the result? Why it was found that this committee was too large. That no real work could be accomplished.

#### Master Plumbers Squeezed.

It was a situation which the Aldermen thought themselves quite capable of meeting. They decided to appoint from the large body a small sub-committee, which was to review the old by-laws; see what new clauses were required; in short a body which was to draw up the revised building by-laws, in shape to be submitted back to the main committee.

At first it might seem that this action was wise, but not after it is remarked that P. C. Ogilvie, the representative, appointed by the master plumbers association, was left off this sub-committee. Mr. Ogilvie was the only man who had an intimate knowledge of plumbing work. He was the only man who realized how inadequate are the present by-laws relating to sanitary engineering. Mr.

Ogilvie was left off. Of course he is still a member of the main committee, but not of the sub-committee which is doing the real work.

#### Makes Necessary Postponement.

The result will almost certainly be that the report, when finally made, will lack many regulations which Mr. Ogilvie will think necessary; or will include regulations which his experience will tell him, are not in the interests either of the sanitary and heating engineers or of the public at large. He will probably feel called upon to object, and the final action will be again postponed. As it is goodness only knows the sub-committee is proceeding deliberately enough.

#### Warning for Others.

What is the use of relating this here, some may ask? Well there is a good deal of use. It is, in the first place, a question which vitally affects Montreal members of the trade. But it is more than that. This revision of by-laws is a movement which is going to come up in many other cities. It will behave the sanitary and heating engineers to watch the work closely, and to make sure that one of their number is in close touch with it. By the experience of their Montreal colleagues, they will be able to profit, and possibly avert some of the unnecessary and harmful delays which have occurred there.



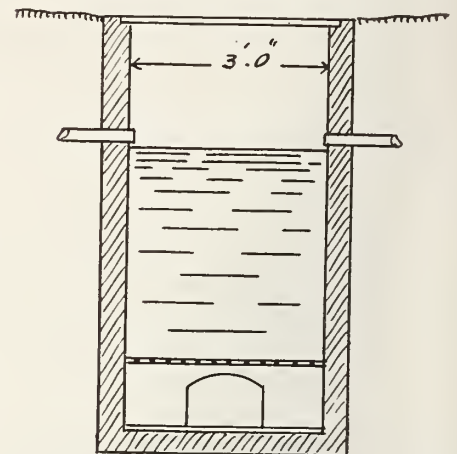
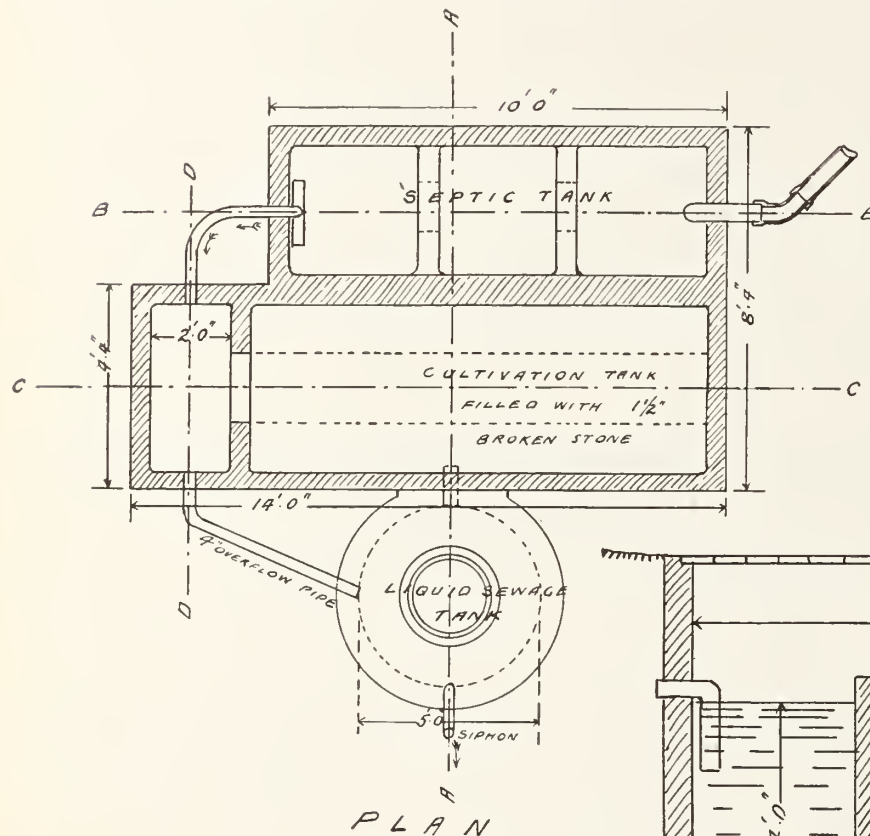
# Methods of Sewage Disposal

By Charles W. Chandler.

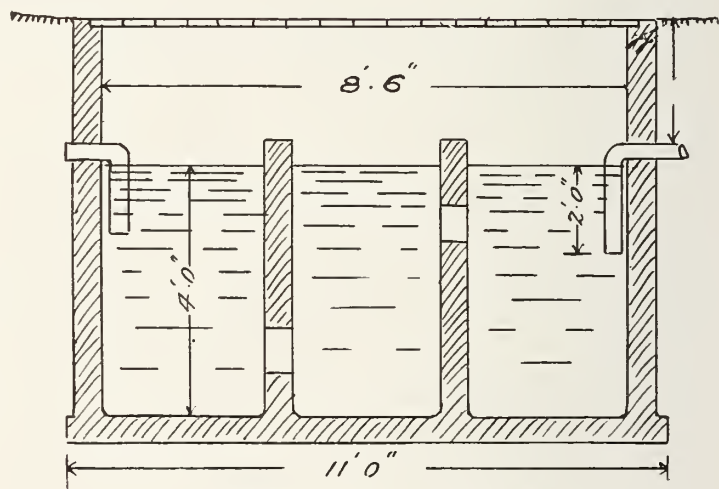
The accompanying plan of a combined septic and cultivation tank is somewhat novel. The septic tank proper is oblong,

oblong tank filled with broken stone or other suitable material. The sewage enters the cultivation tank at the bottom,

and the motion through it is upward, and anaerobic action takes place while the sewage stands or flows through the

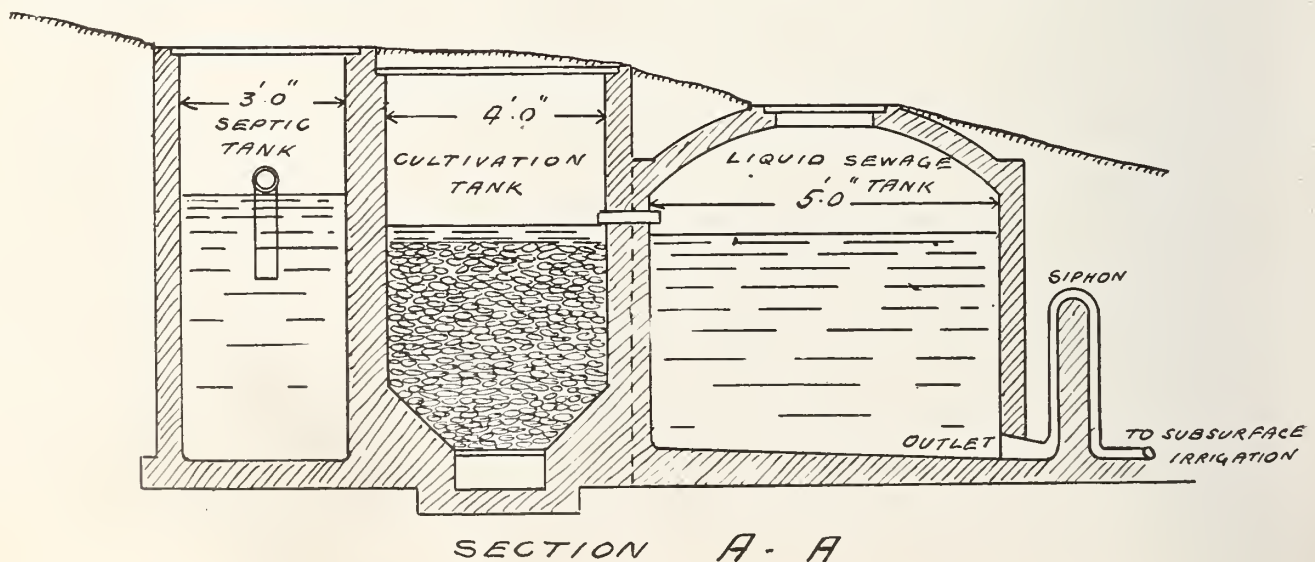


SECTION D-D

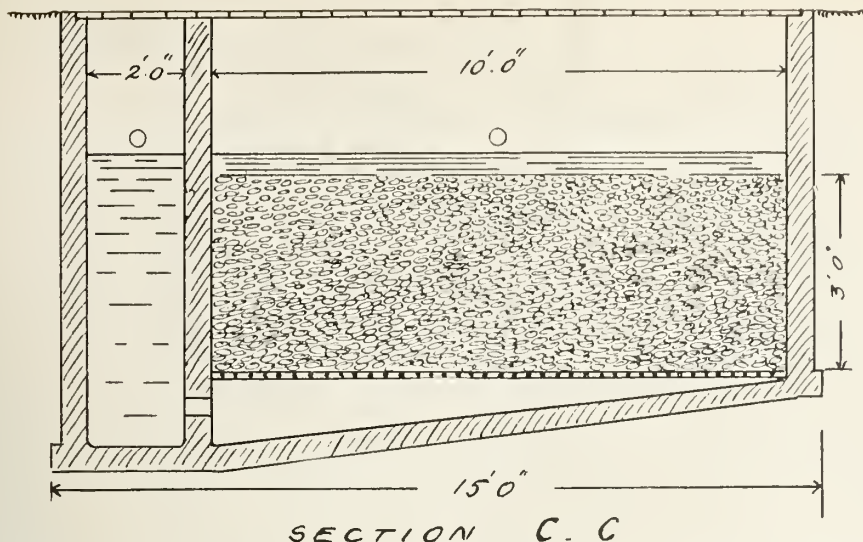


SECTION B-B

and is divided into three compartments. The inlet and the outlet are submerged, and the openings between the compartments should be in the positions as shown. The effluent from the septic tank passes through an inlet chamber into the cultivation tank. This is an



SECTION A-A



cultivation tank. The effluent is gathered into a circular liquid sewage tank, the contents of which are discharged by means of the usual automatic sewage syphon.

#### RANGE BOILER KNOCKS.

Editor, Plumber and Steamfitter:—I have a range boiler under consideration that pounds, sometimes quite badly. There is no lime in the water front and the connecting pipes are not trapped.

What would you suggest looking for next?—"Puzzled."

Some of the pipes may pocket air at some point between the range boiler and the fixtures. The pipes may also not be reamed, thus reducing their size nearly one-half. Many journeymen never ream the pipes which is a great oversight upon their part. We believe, from your letter, that one, or perhaps both of our suggestions are pat to your case.—D.C.H.

## Plumbing School Presents Difficulties

**Hard to Secure Proper Teachers. Then There is the Abuse to Which the School is Put by Incompetent Men Who Use its Training as a Stepping Stone Into the Trade.**

Now that there is so much talk about technical education it is worth noting that in Montreal this need has been quite largely met. Certainly as far as the plumbing trade is concerned an effort has been made to give every facility which will aid apprentices in fitting themselves for their life work.

A plumbers' school is held in the Monument National, and here, for the payment of a very moderate sum, all who wish may go to get that technical training which they find a little hard to secure in the workshop.

With such a school, as might be expected, there are difficulties. One of these is to secure teachers. Never a school without a teacher, you know, and teachers are hard to secure in these days when education is highly valued, but teachers are valued lowly.

#### Teachers Hard to Find.

The plumbing school in Montreal is not entirely run by the plumbers association. The aim is to have this body appoint one teacher, and another to be named by the journeymen's association. This method has worked splendidly in

one way. There has been no dissension between the bodies, but there has been a good deal of difficulty experienced in getting the right teachers. The remuneration offered can not be large. The average sanitary and heating engineer is inclined to take things easy when he has completed a good days work. He is not anxious to put himself in charge of fifty or sixty boys and men, and to set himself the task of giving them a grasp of some intricacies of the plumbing business.

At the present time the teacher appointed by the master plumber's association has resigned. It is therefore incumbent upon the association to appoint his successor, and though the president, J. R. Meadowcroft, is on his way to England, a meeting of the association will be called.

#### Some Requirements.

It is a hard task, this securing a teacher—a hard task for many reasons. The man, in the first place must be an expert. That, perhaps, is the requirement which it is easiest to fill. In the second place he must be thoroughly at home in both the English and French

languages, for there are in attendance at the school, boys and men of both races. Assuredly the question is a difficult one, but the school is considered an institution which must be maintained, and the proper teacher will be found.

Very seldom indeed, is there an institution formed which does not bring with the good some evil results. So it is with this school. The training the apprentices get is splendid. It fits them for better work, and helps to overcome such a scarcity of labor as is now being felt. On the other hand it is hard to say who shall and who shall not attend this school. As a matter of fact, in Montreal, grown men—men with beards on their faces—have come to get the training. Some of these have never served as apprentices. They know practically nothing of plumbing, but thanks to the training of the school, they are enabled to go out with a knowledge—entirely inadequate—yet sufficient to permit their passing themselves off as plumbers.

A number of Jews have taken this action. They start in the trade in the east end of the city. Perhaps they only do cheap work, and do not take many contracts which would otherwise go to reputable plumbers; yet they do poor work, and thereby they do the trade harm. It is the work of such men as these which is constantly being condemned by the Civic Inspectors.

Here is a problem. How are these men to be excluded from attending the school? It is the one serious evil which has been encountered, and an attempt is to be made to overcome this.

#### HOW BIG SHOULD A BRANCH BE?

Editor, Plumber and Steamfitter:—Should a branch to a steam radiator be run the same size as the riser that connects to the valve of the same radiator?—S.J.S.

We believe that it would depend upon how long the branch was, and also the size of the radiator. Many fitters claim that it is a good plan to run the branch of one size larger pipe than that of the riser as better results are thereby obtained.—D.C.H.

#### A COIL—HOW LONG?

Editor, Plumber and Steamfitter:—How long can a coil be to heat an ordinary sized room in a factory?—A.W.C.

We should consider that the length would be governed by the room available and also the amount of radiation necessary to heat the room. In a continuous coil you probably would not be safe in making it longer than 15 feet in order to get the best results. A miter coil can be erected to almost any length, provided you allow for expansion and the right fall to the pipes.—D.C.H.



# Bad Condition of Public Buildings

Sanitary Report Submitted at Convention of American National Association  
Showed That the Plumbing in Many Public Buildings and Parks Was Very  
Bad—Conditions are Identical in This Country.

IT is a well known fact in the trade that the condition of the plumbing and ventilation of most public buildings is extremely bad. Some buildings are in disgraceful condition, but the public does not seem to have awakened to the fact that there is anything wrong. In this connection we reproduce the report of the Sanitary Committee read at the convention of the American National Association of Master Plumbers at Salt Lake City. It gives some idea of conditions as they exist on the other side of the line. There is much in this report that can be applied in this country.

"The work of your Sanitary Committee the past year has not been devoted to scientific research but has consisted mainly in gathering statistics from members of our association regarding the sanitary condition of public buildings, parks, etc., in different parts of the country. As stated in a communication from our President, the National Association of Master Plumbers from time to time has resolved against the unsanitary conditions of public places and decided to ask Congress to create laws controlling them, so that the master plumbers have placed themselves on record as pioneers in the movement in fighting possible disease that could be transmitted through that medium.

"The press has given the matter much publicity and the medical profession in annual convention acted along the same line, setting forth the possible chance of infection in these public nuisances. Consequently, I considered the idea and suggestion of our National President in this matter most admirable and believe that the gathering of this information from the members of our association will inaugurate a most important and practical work for the Sanitary Committee and also for the Legislative Committee of our National Association. It will, I believe, be the means of bringing prominently to the attention of the people, the danger of ignoring these breeding places of disease, and arouse them to the importance and necessity of securing legislation that will place them in sanitary condition. For the purpose of carrying out the work mapped out for our committee a printed form to be filled out, showing the general condition of sanitary appliances in the public places of each city, such as theatres, depots, public parks, fair grounds, schools, churches, was mailed to the secretary of

every local affiliated with our national association.

The communication, which also asked the appointment of a special committee by each local to report upon the sanitary condition of the toilet rooms, whether the plumbing fixtures were modern or antiquated, the condition of the room as to cleanliness, whether the plumbing was connected with sanitary sewers or cesspool; also whether those used for drinking were located within one hundred feet of cesspools. To this letter we received replies from 108 cities, representing 31 states.

"A number of locals throughout the country have shown their willingness to co-operate with the National Association by making a systematic investigation of the sanitary conditions of public buildings in their respective localities. Some have submitted a report that shows their investigation has not been of a very thorough character, while still others have evidently been too busy or too indifferent to honor us with a reply.

"In nearly all of the reports there are marked points of resemblance, showing that while many of our public buildings and parks throughout the country are equipped with modern plumbing, there is a tremendous number that are not in sanitary condition, indicating that great as the progress that has perhaps been made in sanitation in recent years much yet remains to be attended to in that direction. A great many of the buildings where the plumbing is classed as unsanitary are such, because they are not kept up with the proper degree of cleanliness, even though in some cases they are provided with modern plumbing fixtures.

In some the plumbing system is in various stages of dilapidation. In others the fixtures are antiquated and in deplorably unsanitary shape and have become nothing but breeding places for disease. The theatres are indifferently equipped with toilet conveniences for the public. Some of the more recently constructed theatres are provided with modern plumbing, but the vast majority, it is quite evident, have insufficient facilities in this respect, and are poorly ventilated and unsanitary. A development of the past few years is the numerous moving picture theatres, nine-tenths of which are not provided with any public toilets, and practically all of them are without proper ventilation.

"With regard to the country's depots and tractional terminals we find that while many of the railroad stations, especially in some of the larger cities, have attained a high plane in the excellence of their plumbing, it has also come to the knowledge of your committee that in many of the tractional terminals all over and some of them owned by the wealthiest railroads, the plumbing is in the most lamentable condition, and in many cases unfit for the use of human beings, the fixtures never being washed and the toilet rooms devoid of efficient janitor service, kept in a filthy condition.

"A general matter of complaint from different states also is that the railroads do not provide janitor service or attendants to keep the depot toilet rooms in proper condition. Similar conditions to a more or less extent prevail in connection with the public parks, resorts and fair grounds, in all of which there is a vast room for improvement. A few of the states and municipalities, more progressive than the others, have commendably erected modern public comfort stations for the convenience of the public, but in nearly every instance the parks and recreation spots of the people are woefully lacking in proper plumbing facilities. Many of them indeed, are without any convenience whatever, some having the most primitive equipment, while others are really a menace to the public health.

"In the various school buildings throughout the country we find a gradual improvement going on in the quality of plumbing being installed. With comparatively few exceptions, it would seem that the plumbing of the schools is modern. A great many, if not the majority of them, are equipped with the latest improvements in sanitary construction. There are many public and private schools, however, that are in a disgraceful condition as far as sanitary plumbing is concerned. Some of these are provided with the latrine type of closet, which unless flushed regularly is unsanitary and as a general thing unsatisfactory.

"There seems, however, to be a tendency among the intelligent and progressive boards of education to replace the latrine with individual closets. Some of the private schools which seem somehow to escape state municipal supervision are provided with only the most primitive form of plumbing, vaults in many cases



being used. The plumbing in the churches of the various towns and cities is fairly modern, but not always kept in the most cleanly condition. While the majority of the state, county and municipal buildings contain modern plumbing and are kept in fair condition, it is nevertheless a fact that in many of the court houses and other public buildings owned by the city or state, the plumbing is both dilapidated and unsanitary. The plumbing facilities of meeting and dance halls, according to reports received, are far from what they should be. A great many of the toilet rooms used in connection with these public places of amusement are in a filthy and unsanitary condition. The same and worse is true of many of the country's summer and sea shore resorts in various sections.

"I have not the time to go into detail, but, judging from our reports from some sections and which I have not the slightest doubt exist in every state, the conditions are appalling and certainly a great source of danger in the infection and spread of disease to those who frequent these places. While in the circular sent out by the National Association information was not sought concerning their sanitary condition, the hotels, restaurants and private dwellings, it is evident are sadly in need of attention. The plumbing of some may be of the finest quality, but I venture to state that probably 50 per cent. are unsanitary to a less or greater extent.

"With these facts before you, gentlemen, gleaned from a source which we have every reason to believe reliable, does not the suggestion of your National President impress you as it impresses your committee, that the information gained is of the most valuable nature and undoubtedly will inaugurate one of the most practical movements for the benefit of our trade ever undertaken by the National Association?

"Much has been said and written concerning the great progress made in sanitary science, but the resultant benefits to be desired therefrom we have the evidence to show are not enjoyed by the great masses of the people, one of the greatest needs in the public's parks and playgrounds, in its summer and sea shore resorts, in its small towns and in its large cities, is comfort stations. From nearly every state in the union comes an urgent cry for the establishment of these conveniences, which are regarded as necessities of modern life. For years our National Association and the master plumbers generally have probably been advocating these things, but we are making such slow progress that we are almost standing still. There seems to be no systematic effort being made by either the larger or smaller cities in the various

states to provide reasonable toilet facilities in their parks or populous districts for the convenience of the public.

"There should be, in the opinion of your Sanitary Committee, a standing committee on public comfort stations in every local association throughout the country to advocate and push with all the influence they possess, legislation, both on the part of the city and the state that will bring this about.

"I understand from Mr. Paul Blatchford, secretary of the Central Supply Association, that the plumbing supply houses of this country, through the National Committee of the Confederate Supply Associations, are also working strongly for public comfort stations. I have written Mr. Frank S. Hanley, secretary of their National Committee (261 Broadway, New York) on the subject and I understand the matter of advocating public comfort stations was made an important topic of discussion at the annual meeting held at Atlantic City, July 5, 1912.

"There should also be, in the opinion of your Sanitary Committee, created by law in the various states, a standard plumbing code, and state and country inspectors of plumbing whose duty it would be to compel a rigid compliance with the plumbing laws to the end that all public buildings, parks, resorts, hotels and private dwellings would be placed and kept in sanitary condition as far as plumbing and ventilation are concerned. Let us also advocate, as has been the slogan of some of the older members of our trade, "House-to-house inspection." If not another new building were constructed in the United States for the next ten years, it is the judgment of your committee, formed from the information we have received from our own members, that there is more than sufficient plumbing work to be overhauled, replaced and put in sanitary condition, that would keep the plumbers busy for that period of time.

"We are an organization of business men organized for mutual benefit and protection, and if we utilize our energies and secure by proper legislation adequate sanitary improvements, will it not of necessity greatly increase the volume of our business and be of benefit to our trade financially? We must not lose sight of the fact that we are organized primarily to better our own condition and if in doing so we are the instrument by which the public health is improved, let us not feel ourselves called upon to dwell upon the blessings we have conveyed to humanity, of the inventive genius of the members of our craft, but let us devote some of our time and thought to practical things and struggle onward, with all the energy we possess to make

our local, state, and national associations a medium through which the plumbing trade and its members may continue to improve and progress.



## NEWEST BATH — SOME OF ITS DEFICIENCIES.

(Continued from page 11.)

bath; or, having got him in, to get him washed. I have extended the diameter of the pan to 4 and even 5 ft., so that "Vulcan" can have free play inside; and I have imagined that the water is not to be in the bath outside of it. But how he is to get at it over a screen shoulder high I cannot conceive. I have supposed that he is simply to stand upright, having got in somehow, and pour the water once for all over his head; but this won't do because "Vulcan" speaks of having—I beg pardon, he says "obtaining"—a satisfactory "wash," and a wash implies free space to scrub, and something more than half a gallon of water in a 4 ft. pan.

I suppose the explanation of those difficulties of mine is very simple. I do not mind what castigation I get together with the explanation so long as I gain relief from the mental strain I have suffered in trying to realize "Vulcan" getting, that is, obtaining, a satisfactory wash with half a gallon of water in a portable circular bath surrounded by a waterproof screen shoulder high. I should like such a bath myself, but at present I do not see how to get in, or being in how to get a wash, or being washed how to get out.



## PRESSURE HEATING.

The National Steam Specialty Co., Chicago, have issued a catalogue illustrating their pressure hot water heating apparatus. Special attention is drawn to the "B" heat intensifier. The catalogue gives a complete description and contains much data relative to radiation, pressure, etc. It is well illustrated and printed in two colors. A folder is included which takes up the "B" heat intensifier and describes it thoroughly.



## Was Assaulted.

Stratford, Ont.—While lying in a hammock at his boarding house in Douro Street on Thursday evening, Andrew McAulay, an employee at McDonald and Henry's plumbing store, claims that he was attacked by an unknown man with a knife and that only prompt action on his own part saved him from serious injury.



# Tips for Helpers---By "Phoenix"

## Chapter V.

We should profit by the mistakes of others, but generally we have to get "bumped" many times ourselves before we wake up to the fact that we have not been using our horse sense to the best advantage. Just to show you how big a blunder a steamfitter can make when he's allowed free swing I am showing you a drawing in Figure 1, of a convenience (?) that a fitter once installed for the benefit (?) of a certain fireman in a manufacturing concern. It was desired to supply steam to a tube-cleaner. In supplying the steam it was necessary to carry the pipe across the front of the boiler (shown in Figure 1). Now this particularly bright steamfitter must have thought that a straight line (with some pitch to it) was the shortest distance between two points, for he ran the pipe as shown there by completely blocking the two clean-out doors on the boiler.

Therefore, every time the tubes were to be cleaned, the pipe had to be removed. This fitter could just as well have run the pipes below the clean-out doors, as to install it as he did. Now when that pipe has been removed a few times, the fittings and threads will get loose and leaks will appear.

Would any sane man believe that a party calling himself a steamfitter could possibly so install work? Just the same one did and he had worked several years at the business at that.

So my lad do not get discouraged if you make a few mistakes and happen to get "called down" by the boss for so doing. Remember the saying that "the man who makes no mistakes never makes anything," and also cut out this picture of the boiler and show it to the boss and then maybe he'll realize that there is some hope for you after all.

While talking about mistakes and steamfitters I might as well relate another one which proved very costly and yet it was so simple that it is almost beyond belief that it should have happened. A steamfitter was sent to let the water into a hot water heating plant in a certain residence. He turned on the water without looking over the job upon which he knew there had been some repairs made. Three radiators in the second story were disconnected and of course the rooms were flooded, as there happened to be no one in the house at the time the fitter was there. The ceilings were spoiled and some rugs damaged. Wouldn't one have thought that the fitter would

have looked around a bit before he turned on that water?

In figure 2 a small shelf is shown for the bathroom. These shelves are not intended to hold more than a ton, I suppose, yet to put them up just sending the small screws into the bath is not a very good job. If you are working in a new

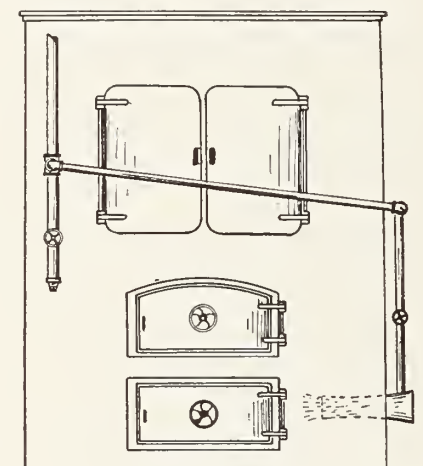


FIGURE I

building, the space between the two by fours can be boarded in and one will have something solid into which to drive screws long enough to securely hold the shelf. I mention this because I have observed several shelves on the "sag" and because the screws do not always come just right to hit the "studding," provided the shelf be located to suit the owner when the shelf is so located. The great point with journeymen plumbers and steamfitters is their lack of foresight. If it was as good as their "hind sight," what a dandy lot of mechanics we'd have all over the country

The lavatory, the closet tank, the kitchen sink. Are they going to hold up and stand the natural wear and tear after you have them set? Why not, if the chance affords, prepare some sound backing for the screws to catch in? Of course its much easier, on the surface appearance, to let it go and "take chances,"



FIGURE 2

but if any of the fixtures happens to not hold, then the shoe is on the other foot, and the contractor is decidedly to the bad on the deal, besides having a muchly disgusted and dissatisfied customer on his hands.

It certainly pays to look after the small points in this game for they may develop into anything but small points before the end is reached.

Besides, if you look well after the smaller points you will, unconsciously, form the habit of looking after the larger points and thus make a thorough job of it. Begin now, to-day at once after you have read this article and try to get the habit of systematic effort, for it will pay you better than anything you have yet attempted. Make system enter into your daily life, both in and out of business. Its far easier to do anything at the proper time, than it is to do it any old time. Also its easier to do it right, than to do it hit or miss. If you don't know how to do a job right, find out. This may not be so easy to do as it is to read, but be assured that "where there's a will there's a way." It is far better than to put in work by guess and having to do it all over, or have someone else do it over after you. Take any first-class journeyman, watch him work. See how he goes at it. See how he gets results. If you don't happen to be working with a first-class man, see if you can pick out his best points. Most any man has at least one good point. Get that point! Then acquire others in a similar manner. In two years you will have a number of most helpful points which were acquired by actual experience—the best teacher of all.



## SEWER AIR ESCAPED.

Editor, Plumber and Steamfitter:—In a four-storey block which I looked over there seemed to be some sewer air that got into the building. I looked around and found that some of the joints on the stack had started. What should make them do so? And how can it be avoided?—M. E. Haines.

Undoubtedly the man who put in the stack did not make any allowance for the expansion and contraction of the stack as this most important consideration is very frequently overlooked. The stack should be so roughed in that it has a chance to expand without pulling the joints apart, otherwise it will either crack or spring the joints.—D.C.H.

# Complete Course of Sheet Metal Work

By L. W. KOSER

Prob. 12 shows how to draw an equilateral triangle (triangle with 3 equal sides) and how to find the centre of same.

Make the line A B of Fig. 1 equal to one side of the desired triangle. Set the point of the compass at B, and with the lead at A, and describe the arc 1, 2. Set the point at A, and with the same radius describe the arc 3, 4, cutting 1, 2, and from the intersection C, draw straight lines to A and B.

Fig. 2 shows method of finding the centre.

Set one point of the compass at A,

and with a radius equal to about  $\frac{3}{4}$  of the distance between A and C, describe the arc 1, 2, and 3, 4, with the same radius, and C as centre, describe the arc 5, 6, cutting 1, 2. Also draw the arc 7, 8.

Then with B as centre and the same radius describe the arcs 9, 10 and 11, 12, cutting 7, 8 and 3, 4.

From the intersections draw lines into the opposite corners, thus developing the desired centre.

Prob. 13 shows method of developing an octagonal pyramid.

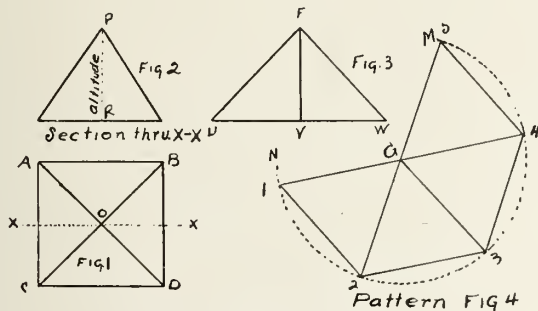
Draw the outline A B C D E F G H of fig. 1, then draw lines into the centre O.

Draw the base line V U of fig. 2 equal to any one of the diagonal lines of fig. 1, as B O.

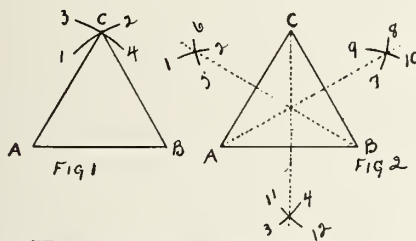
Erect the perpendicular line V F any height desired. Then a line drawn from F to U gives the true length of the hip.

Set the compass to the space F U, and with any convenient point as centre describe the arc N M.

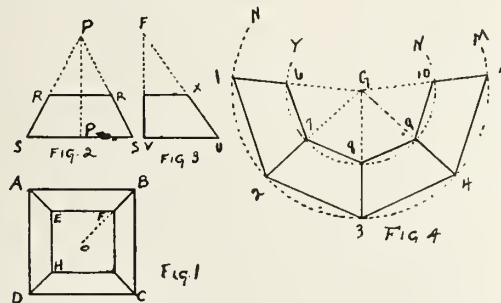
Lay off on this the perimeter of fig. 1 and draw lines into the centre G.



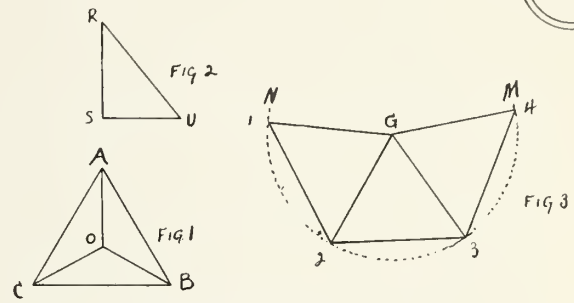
PROBLEM 10



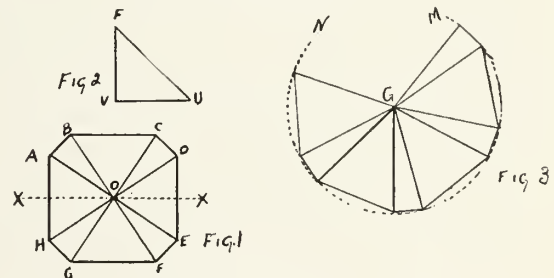
PROBLEM 12



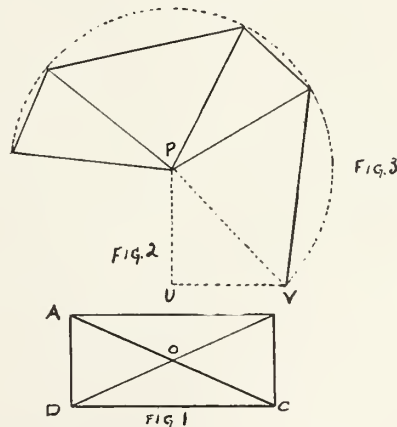
PROBLEM 14



PROBLEM 11



PROBLEM 13



PROBLEM 15



# New Sewerage System at Baltimore

Stuart Stevens Scott writes in *Municipal Engineering*:

Baltimore's sanitary sewerage system, which is being installed at a cost of upwards of \$14,000,000 and which has presented some of the most difficult and unique engineering problems, is now about one-half completed. Already, however, a considerable portion of the completed system is in actual use and as fast as sections are ready, the connections with houses are being made. The sewerage commission in a recent report states that the entire work will be completed in 1914.

The work of constructing is particularly interesting because of its magnitude and difficulty. It has been the purpose of the engineers to rely, as much as possible, upon gravity. This means that an 8-inch sewer beginning at Forest Park, a suburb to the northwest of the city and 13 miles from the disposal plant, must continue on a constantly falling grade, which cannot be flattened beyond certain rates, ever increasing in size as sewers lead into it from valleys and hills covering 32 square miles.

From Forest Park this main sewer crosses a stream, goes under the B. & O. railroad tunnel, over another stream at one point, and under the same stream at another point, goes under the Pennsylvania railroad tunnel, crosses ravines, swings around hills, goes through ridges, through narrow valleys, by the side of tall buildings, its size steadily increasing until, at the disposal plant, it is large enough to contain two automobiles, one on top of the other.

The system as planned provides that two-thirds of the sewage of the city be intercepted and carried to the disposal plant by gravity; the other third to be lifted by pumps, each with a capacity of 7,500,000 gallons a day, from a point 13 feet below tide to the out-fall sewer, a height of 72 feet, including friction. This is an unusually heavy lift especially as sewage is more difficult to pump than water. Three of these pumps are now ready for service in the pumping station, which is large enough to contain two more to be installed later. The foundations for these pumps are independent of the foundation of the building.

The difficulty of the construction work is doubled on account of having to build two complete systems of sewers and drains, which cross and re-cross each other at a thousand different places. The

necessity for the double system is that the legislature requires every gallon of sewage taken into the sanitary system to be purified before discharging it into the Chesapeake Bay or its tributaries. It was therefore of vital importance that the amount of sewage to be pumped and treated be reduced to a minimum in order to keep down the size of the sewers, pumping station, the disposal plant and the unnecessary constant treating and pumping of clear rain water.

The only way to separate the rain water from the sewage, was by the construction of two independent systems. Therefore, the sanitary sewers will take care of the drainage from bath-tubs, kitchen-sinks and toilets. The rain water will pass off through storm water drains by inlets at street corners. To install these two systems in the beds of streets of a city more than a hundred years old, in which a mass of pipes had been laid, but in which practically no space was left for the sewers or drains, brought the engineer face to face with a series of problems as complex as they were varied. If the sewers could be laid in the streets, matters would be simplified, but with an eye to saving money for the householder, who has to pay individually for the connections, the engineers selected the alleys.

In these narrow thoroughfares not only is there a lack of room, but the workmen are continually hampered by a constant surface flow from kitchen-sinks and bath-tubs, of leaking water pipes and old sewers. More than that, the new sewers pass close to old brick buildings on shallow foundations and the owners of these buildings are ever alert to find cracks alleged to have been caused by the new construction work. In this respect the engineers have been wide awake. They have a photographic department and before any excavations are made the walls of buildings along the line are carefully examined and wherever a crack in the brick work is noticed, it is photographed. These photographs have played an important part in settlement of contentions of owners who have sought to blame the engineers for something for which they were not responsible.

In the section of the city around the water front the difficulties were materially increased by having to work below tide level and hundreds of feet of coffer-damming had to be built. The sewers completed and the sections under con-

tract measure about 160 miles and a goodly portion of them are large enough to drive through in automobiles; indeed, not long ago the Governor of Maryland, the Mayor of Baltimore, the members of the sewerage commission and about fifty guests made such a trip from the outfall end, nearly six miles underground.

A peculiar feature in connection with the sewerage work is that the greater percentage of visitors are from out of Baltimore. Engineers from all parts of Europe and even China have visited the great disposal works and splashed through miles of mud to see just how the work is being carried on. A most important feature, from an engineering point of view, is the method by which the work has been divided into sections, each section being considered a unit.

The disposal plant is constructed on the unit system so that it may be added to as the sewerage system is extended. The units so far completed are sufficient to take care of a population of 75,000. The units will be increased until they can take sewerage from a million population.

The method of treating the sewerage is as follows:

At the mouth of the outfall sewer are installed screens that catch such things as sticks, rags, etc., which will be removed and burned. The sewage then passes through the meter house, which measures its flow; then through hydrolytic tanks, about 450 feet long, requiring eight hours for passage—a sufficient length of time to allow the solids to settle, the liquids passing on through an intercepting channel to and through what is called the gate house, which distributes it to the stone sprinkling filters, located at a level of 15 feet below the hydrolytic tanks, giving a hydraulic head of sufficient force to spray the sewage over these stone beds through nozzles, or jets, spaced 15 feet apart. The hydraulic head will be controlled by butterfly valves, causing sprays to rise and fall, varying from close to the nozzles out to the limit of 15 feet, thus utilizing the entire surface of the stone bed, a large portion of which would be wasted if the sprays were stationary. These nozzles will throw a square spray, thereby saving additional space which would be lost if the sprays were circular, as where circles touch there is a lost triangle.

The spraying of the sewage through the air is essential to the aeration and purification of the sewage. As the sew-



age falls on the stone beds it trickles down through 8½ feet of broken stone, varying in size from 1 inch to 2½ inches. The passing of the sewage through these beds forms a gelatine-like film on the stones, in which certain bacteria multiply in the sewage.

On reaching the bottom of the stone beds, the sewage is practically pure. It is then carried by intercepting channels to a central channel under the stone beds, which finally delivers the purified sewage to the settling basins where it requires three hours to pass through. These settling basins are not for the purpose of causing additional purification, but to clarify the fluid, as there are

certain mineral substances in the sewage which the bacteria in the stone beds do not annihilate, such as are found in the Mississippi river water, which is muddy, but not injurious to drink.

The sewage then passes with a drop of 18 feet to the power house, in which turbines are placed, operated by the flow of the sewage. They in turn run dynamos which generate electricity, giving power to light the plant, run the sludge pumps and lift the clarified sewage to a water tower for flushing purposes. In other words, by the simple gravity flow of the sewage, it is purified and power is obtained to light and run the plant at practically no cost.

well for the Capital City of Canada, with a population of approximately ninety to one hundred thousand to have no representatives, while Guelph with less population is represented 100 per cent. If the Ottawa master plumbers were to have an efficient organization, they could easily put a stop to whip-sawing in regards to sub-contracts. In fact there would be no such thing as sub-contracting. The master plumber would, and should do business direct with owners or architects. If the sanitary engineer, with his years of hard-earned knowledge is not capable of doing business direct, I would like to be shown the contractor that is. For too long the plumber has been everybody's goat, and its time that some of them woke up and instead of wearing their feet off on a miserly 10 per cent. profit, would realize that on ninety per cent. of their contracts they just about break even, and often have a loss, with all the trouble and worry thrown into their bargain.

Prices in any commodity are what the seller makes them, and if they care to let any Tom, Dick, or Harry use them for a jumping jack, or to whip saw, then it is time that they realize that their interests were the same, and they formed a good strong association, and that is what Ottawa needs most at the present time.

Yours truly,  
One Interested.

## Plumbing and Heating Markets

### MONTREAL.

Montreal, Sept. 14.—As all buyers know the market has been doing strange things this last few weeks. Many of the products wanted by sanitary and heating engineers have been advanced, and there seems good reason to expect that the advances are not the last. Of course there is no difficulty finding the cause for the upward movement. For all metals there is a heavy call, and the supply being somewhat inadequate the market is naturally strong. Then syndicates, which appear to have gained control of many metals, are taking advantage of this state of affairs to rush the prices up. It is freely rumored that they intend boosting the metals materially above their present level.

### About Buying.

This seems a time to buy, though a time to buy with care. There may be a decline in some lines, and no man wishes to load up in face of such a possibility. On the other hand advances seem much more likely. Enough stock to cover contracts should certainly be secured.

In galvanized sheets there has been a new level struck, the general advance being about 10 cents. Iron pipe remains at the discounts recently fixed, but in the face of the high price of iron—the highest price touched for more than fifteen years—there is every likelihood that another change will be made within a fort-

night. The change will be at least a 5 per cent. advance.

### Advances in Lead Pipe.

Lead pipe has changed in price again. Only a fortnight ago it was found necessary to change the list price to 7½¢ for lead pipe, and 9¢ for lead waste pipe. Now the discount of 10 per cent quoted on these lists has been first reduced to five per cent., and then struck out altogether. In all the advance during the month has been approximately 15 per cent. Nor is there any certainty that another advance will not come. Lead is exceedingly high, and is expected to go higher.

Furnaces and Radiators.—The call is commencing to be heavy. As yet the supply is sufficient to meet the demand, but there is evidently a scarcity coming, especially with radiators. As for soil pipe—well those who took the advice offered in these columns, as many did, have reason to be thankful now. Their early ordering has given them a supply at a time when a supply is most needed, and when many who did not prepare in time, are without the goods to finish their contracts.

Enamel Ware.—The completion of so many houses is causing big business to be done in this line. There has not yet been and scarcity noted, but the handlers fear that they will run short of some lines if the heavy demand continues, as it seems certain to do.

### USING MALLEABLE FITTINGS.

Editor, Plumber and Steamfitter:—A steamfitter I had last week refused to use some malleable fittings on a run of steam main and several branches. I claim that they are all right to use. Now who is right?—O.C.G.

Probably both of you are correct. It is a situation where judgment should be used. Malleable fittings are mostly used on gas-piping, though we have seen them used quite frequently on steam work. The objection to steam work is that malleable fittings have to be cut off with a cold chisel in case it becomes necessary to make any repairs or alterations. Probably your fitter had had some such experience and so did not care to use the malleable fittings. They make a neat looking job and where the room is very limited, can be used to advantage, according to the way we look at the matter.—D.C.H.



### Plumber Married.

St. Thomas, Ont.—The marriage was solemnized at the home of the bride's mother, Mrs. Jas. Scarlett, 64 King Street, London, of Geo. W. Blanchard, plumber of this city, and Miss Edith, the only daughter of Mrs. Jas. Scarlett. The ceremony was performed by Rev. Mr. Whiting, pastor of the First Methodist Church.

## Ottawa Needs Strong Organization To Put Stop to Sub-Contract Evil

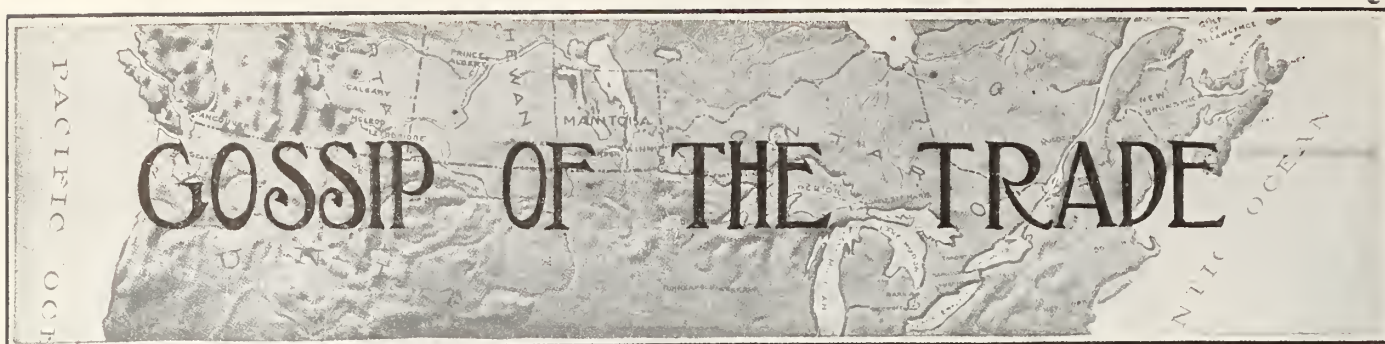
To the Editor of Plumber and Steamfitter:

In your issue of a recent date, I found much pleasure in reading an article concerning the sub-contract system in Ottawa. While I am quite in accord with what has been written, and will say that the writer deserves every praise for his frank statements in regard to the sub-

contract system, yet he has not tapped the main reason for the trouble that exists in this city, to the plumbing and heating contractor, and that is the lack of a real, live, efficient organization of master plumbers.

At the late convention to Calgary, Ottawa was woefully lacking in representation. It certainly doesn't look very





### GOES TO THE SOO.

Haileybury, Ont.—C. A. McKane, the well known master plumber, has accepted a position as manager of a large plumbing business in Sault Ste. Marie and leaves for there this week. His family will however, continue to reside in Haileybury for the present. The departure of Mr. McKane will be generally regretted, for as a citizen he has always willingly aided in the advancement and betterment of the town. As a member of the Local Board of Health and as a director of the Haileybury Horticultural Society he will be missed.

### Have Opened Offices.

The Alberta Plumbing & Heating Co. have opened temporary offices at 213 Rudyk Block, Edmonton, where they will be pleased to receive catalogs and prices on all goods manufactured for the plumbing, heating, gas fitting, filtering, and vacuum cleaning business. Their new show-room and shop will be located at the corner of Bellamy and Jasper Sts. as soon as their new three-storey building is completed which will be about Oct. 15, 1912.

### INTERESTING WORK.

The accompanying illustration shows a piece of work done by a Fort William plumber. It was used in the union float

in the Labor Day parade. The union won a special prize, donated by Mayor Geo. A. Graham. As the handiwork on this piece of work is now practically a thing of the past, the exhibit is unique and interesting.

It will be noted that the letters on the sign at the bottom of the picture were worked out with solder on sheet lead.

### WANT TO USE TARRED PIPE.

Moose Jaw, Sask.—At noon to-day a delegation from the plumbers of the city waited on the City Commissioners with a request that they be granted the right to use any kind of surface pipe which they might be able to secure, both in making connections and in the upright work in houses. They stated that their request was the outcome of the scarcity of Canadian tile pipe and every other kind of pipe. The pipe which they would probably be able to secure would be tarred pipe, and this the plumbing inspector had objected to them using on the grounds that it was "seconds."

The plumbers explained that the condition would have a very serious effect on the building trades if they were not able to secure the pipe called for by the by-law, and were not allowed to use that which was procurable. They also asked that they might be allowed to use what is

known as the Scotch pipe, which is a tarred pipe, coated with a special preparation which it is calculated to protect the pipe from the acid action of sewage.

### Plumbers' Licenses Required.

Chatham, Ont.—At a recent meeting of the city water commissioners a stringent by-law was passed regulating the issuing of plumbers' licenses.

Under this by-law, before doing any work on the city water services, a plumber must take out a license, paying \$5 for the first year. This license is renewed on payment of a 50c fee for each ensuing year. No permit to do any work connected with the city water services will be issued except to a licensed plumber. Each plumber must report to the secretary within 24 hours of the completion of any work. For any infraction of the by-law the license may be suspended or cancelled. The penalty for doing plumbing work without a license is fixed at \$10.

The by-law also regulates the placing of meters, pipes, stop-cocks, etc., specifying that the stop-cock on a service shall be placed at a depth of not less than 3 feet 6 inches. Only good material must be used. Plumbers are also restrained from loaning wrenches or other implements by which water can be turned on at the curb boxes.

The board ordered 150 cards printed containing the important features of the by-law, for distribution among the plumbers.

### Trade Notes.

Calgary, Alta.—Walter Weir is starting in the plumbing business here.

Saskatoon, Sask.—A plumbing business is being established by H. J. Warren.

Calgary, Alta. — The J. P. Powell Hardware & Heating Co., have started business.

John McKelvey, of the well known firm of McKelvey & Birch, Kingston, has returned home from a trip to Atlantic City. His health has been greatly benefited by the trip.

J. R. Meadowcroft, of the Garth Company, Montreal, has left for the Old Country on a two months' trip. Mrs. Meadowcroft is accompanying her husband.



## Not an Enterprise for the "Quitter"

"If there is one enterprise on earth," says John Wanamaker, "that a 'quitter' should leave severely alone, it is advertising. To make a success of advertising one must be prepared to stick like a barnacle on a boat's bottom.

"He must know before he begins it that he must spend money—lots of it.

"Somebody must tell him that he cannot hope to reap results commensurate with his expenditure early in the game.

"Advertising does not jerk; it pulls. It begins very gently at first, but the pull is steady. It increases day by day and year by year, until it exerts an irresistible power."

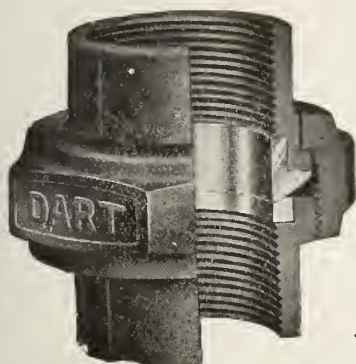


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Use this joint when connecting pipes—it simply cannot leak and cause trouble.

The Dart is strong and durable. Will make tight joints time after time without the slightest damage to its long life.



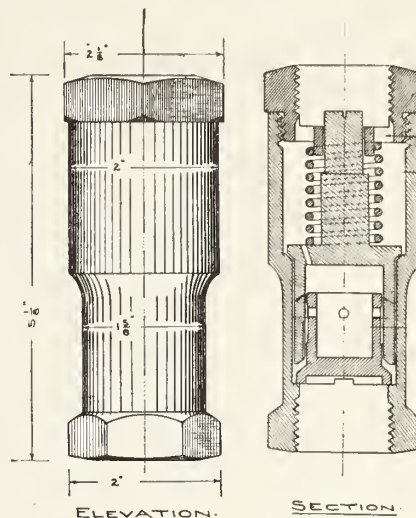
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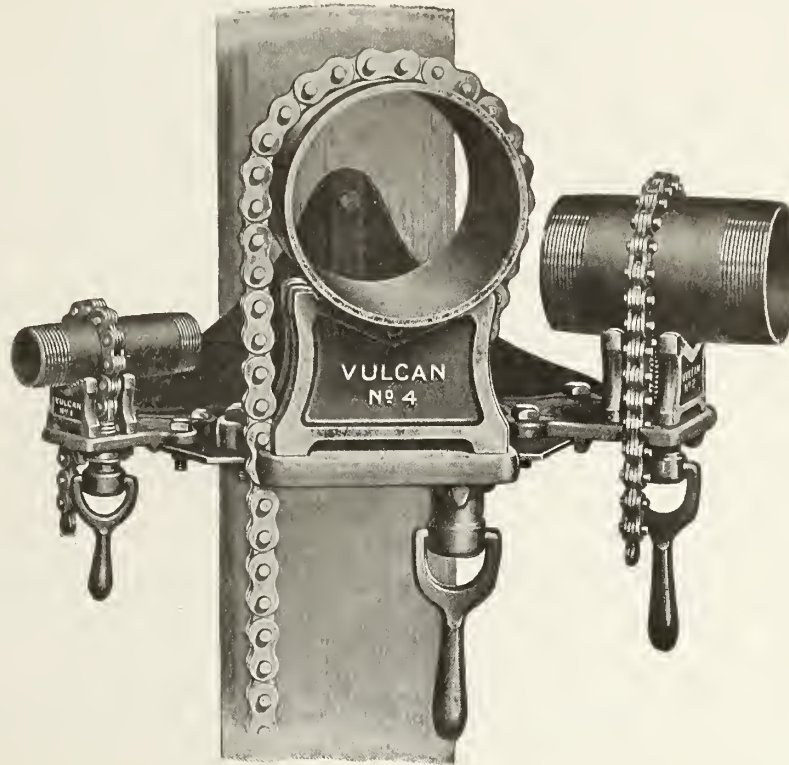
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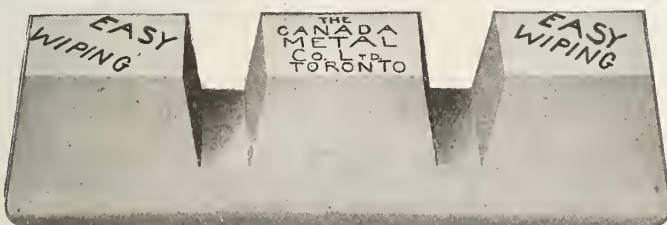
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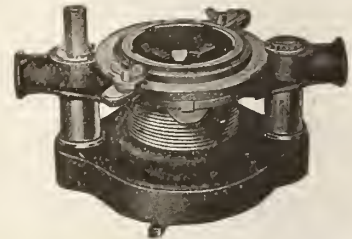
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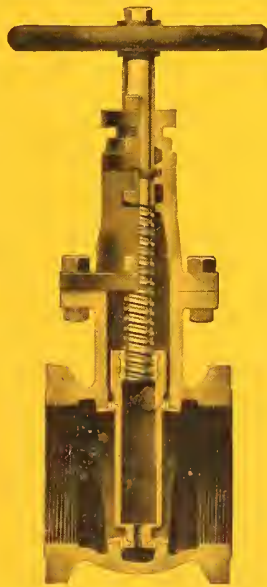


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No. 21

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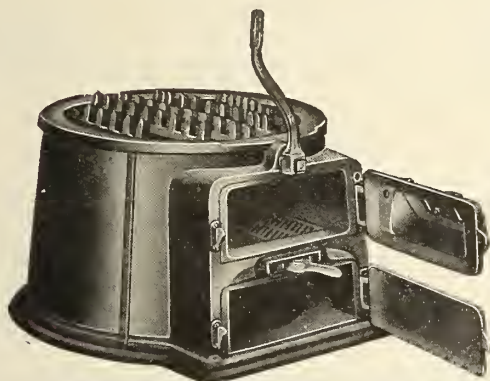
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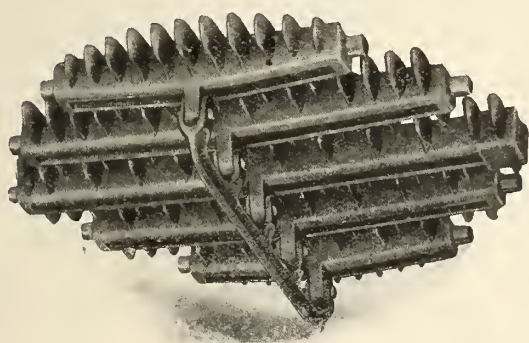
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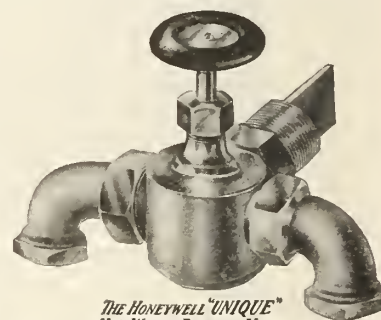
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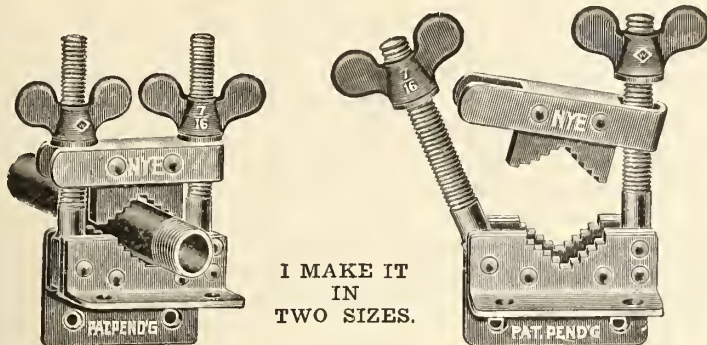
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And also a pug.  
My pet is a little  
Old earthenware jug.

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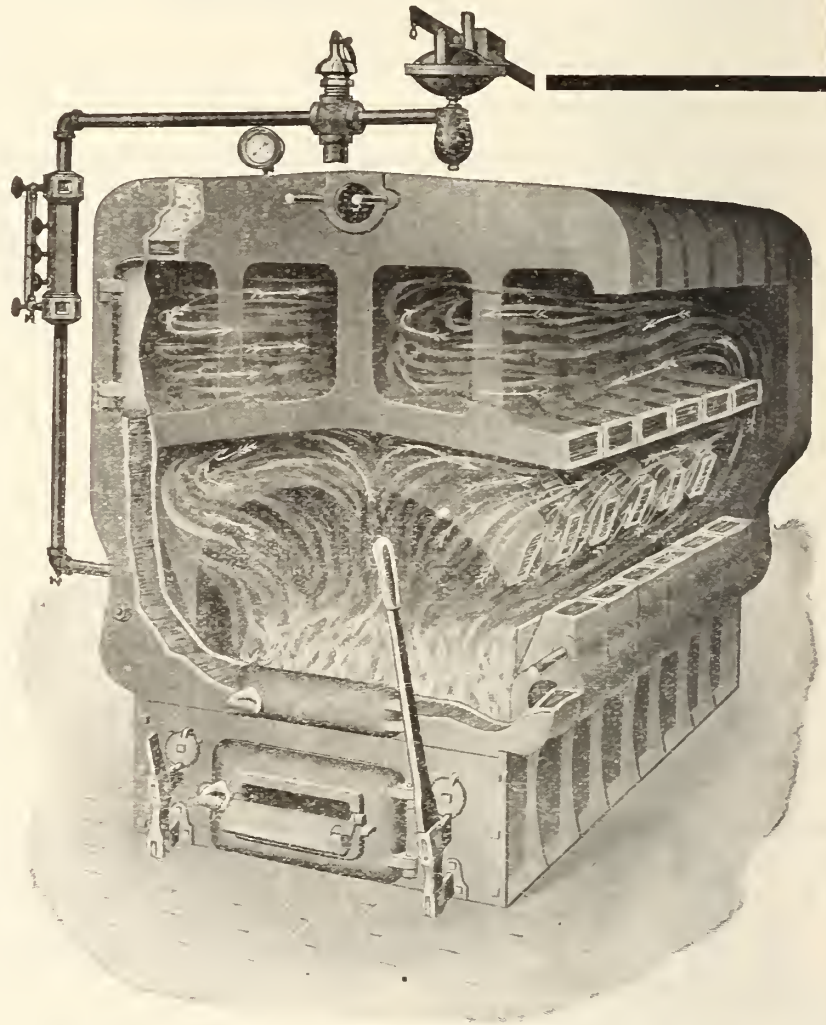
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# Plan of Combination Heating System

Method of Installation Followed With Considerable Success — System Comprises Warm-Air Furnace With Hot-Waters in Combustion Chamber—House is Well Heated Despite Unusual Arrangement of Rooms.

THE following article is reproduced from the Metal Worker:—

The accompanying plans show a combination warm-air and hot-water system designed and installed by R. L. Spellerberg, Dubuque, Iowa, where the mercury goes down to 20 and 30 deg. below zero without interfering with the comfort of the occupants of this home.

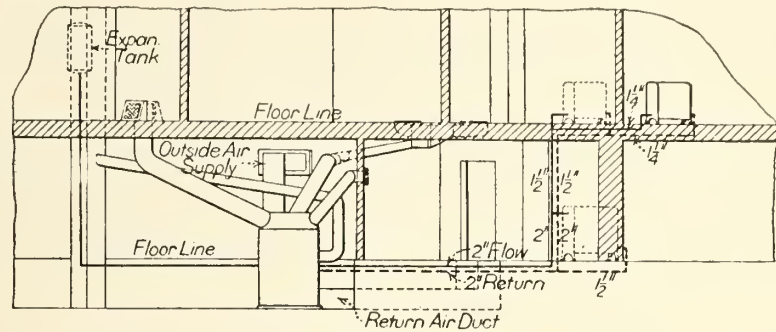
In reference to this installation Mr. Spellerberg has stated that it is notable for three reasons. First, because the heating system has made a modern comfortable home out of a tumble down shanty built many years ago and not all at one time. Part of this building is constructed of stone, part of brick and part is of frame construction. When this building had been purchased by an enterprising man he set out to make it habitable. After rearranging the floor plan as shown, the entire building was covered with cement plaster which changed its appearance so that the oldest residents had they not known of the alterations would not have recognized it.

The second feature is the provision made to heat some of the rooms which are on practically the same level as the furnace and yet expose as little of the heating system as possible to view. The third feature is the heating of some rooms on the different floors with hot-water radiation and some with warm-air registers, as will be noted from the floor plans and the elevation on a diagonal line across the plans.

first floor the kitchen and dining room only are heated, but the entire second floor is heated.

To meet the requirements of the climate and to insure a comfortable temperature in the building a furnace having a 20-in. grate and a 21-in. fire-pot with a 44-in. casing was selected for

The return from this 50-sq. ft. radiator passes across under the floor to a point where it connects with the return from the 40-sq. ft. radiator and the two returns connect into a 1½ in. main which follows the line of the flow riser down to a point under the first floor where all of the return pipes connect



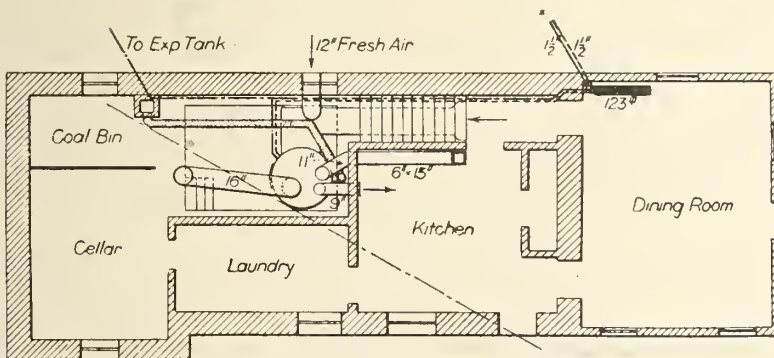
Elevation showing details of heating equipment.

the work. Inserted in the combustion chamber there are two water heaters, and they are rated to have a capacity of 250 sq. ft. of direct hot-water radiation. These were placed in the combustion chamber just above the fire and so that the fire does not in any way come in contact with them. A 2-in. flow main is taken through the side of the furnace at the left of the front and carried to the wall, thence along under the floor to a point where it rises, and after a 1½-in. connection is carried to a 123-sq. ft. radiator on the first floor it is reduced to 1½ in. It then passes through the

into the main 2-in. return, which is carried back to the roof in which the furnace is set. This return was run along under the floor and as the furnace is sunk 3 ft. below the level of the floor the mains run directly across and connect with the openings in the water heaters in the furnace. There is a 1-in. pipe connected with the return which is carried along under the floor to a point where it rises and connects with the expansion tank in a closet next to the chimney on the second floor.

There are three warm-air pipes connected with the heater as shown. A 9-in. pipe runs from the top of the heater to a register in the side wall of the kitchen midway between the floor and ceiling. A 11-in. pipe also runs from the back of the heater through the kitchen wall to a point where it connects with a 6x15-in. galvanized iron pipe which runs along the ceiling of the kitchen as shown, and connects with a box between the ceiling and the floor above. From this box connections are taken to supply two registers, one in the bath room and one in one of the chambers on the second floor. From the front of the furnace a 16-in. pipe is run to a riser box to a double register of the side wall type.

To facilitate the heating of this building further a return-air pipe takes the air from the first floor rooms through a riser in the stairs in the lower hall and connects with a duct having a capacity of 170 sq. in., which leads back and connects to the bottom of the furnace on the side, as shown in the first-floor plan.



Floor plan showing location of heating system and method of heating rooms on furnace level.

The room in which the furnace is set has its floor 3 ft. lower than that of the kitchen and other rooms surrounding it. The ceilings on this floor are but 7 ft. 6 in. while the ceilings on the floor above are 9 ft. high.

The building occupies a space on the ground of about 20x50 ft., and on the

floor and is branched, one branch running to the 40-sq. ft. radiator in one of the front chambers with a 1¼-in. connection and another branch of the same size is carried over to the 50-sq. ft. radiator in the other front chamber. These branches are carried over from the riser to the radiator under the floor.



To insure a supply of fresh air for the building a 12-in. air-supply duct from the outside connects with one of the side windows and then drops down and is attached to the top of the return-air duct.

A better understanding of the manner in which this system is arranged will be

the furnace to the various radiators. It is probable that a careful analysis of the proportions of the various parts of this furnace system to the glass and wall exposures, cubic contents and work done would show a much more liberal provision than is ordinarily found in a

Let them say!" It is a good proverb in a way, yet not a good one for a business man. What people say, even if it is incorrect, may have a bad effect. Those who hear will not understand the misrepresentation. No, a man has to show why he is charging more than others if he would not be discredited by any.

The dealer whose stove pipe cost 12c. a length adopted a somewhat similar method of showing the customer that he was charging only what was fair.

He picked up a length of the pipe he sold, and stated that the Canada plate in this would run 52 to the box, while the plate used in the cheaper pipe of which the customer spoke, would run over 75 to the box. The heavier plate, the customer readily saw, would make the better pipe. When he understood, he was willing to pay the price.

#### Good and Bad Reputations.

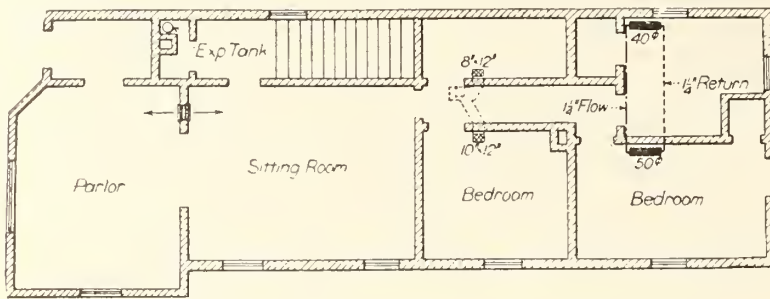
It is the opinion of a good many in the trade that people are willing to pay the price if they understand why the high price is necessary. They are afraid they are going to be "done," that is the only reason they object to a high quotation. It pays the sanitary and heating engineers to explain their prices. It does not do to let any one go away with the impression that the prices asked are exorbitant. A reputation for selling only good goods will be good for a store, but a reputation for selling goods at a high price will tend to keep people away from it.



#### SIZE OF RANGE BOILER FOR ORDINARY WATER-BACK.

Editor Plumber and Steamfitter.—Can you give me any pointers on the size of range boiler that should be connected to the ordinary water-back that comes with the usual size of cook stove? I have a 100-gallon range boiler so connected and it does not seem to heat up very well.—F. J. S.

The ordinary size of water-back has about 110 square inches of heating surface and the best results are secured by connecting such sizes to range boilers that are from 40 to 60 gallons in size. While we have known of larger range boilers than the sizes mentioned being connected to the size of water front (or back) mentioned, we think that the conditions were rather out of the ordinary and would recommend that you use a smaller range boiler. Use pipe connections at least  $\frac{3}{4}$  of an inch in size and be sure to ream the pipes most thoroughly and we believe you will have no more trouble.—D. C. H.



Second floor plan showing registers and radiators.

gained from the elevation which shows the level on which the furnace sets, the level of the kitchen and dining room on the first floor, and the method of running the pipes from the water heater in

furnace heating system. This, however, in view of the condition under which the work had to be done is a matter which should be borne in mind by furnacemen undertaking similar work.

## Meeting the Objection to High Cost

**Necessary to Show People the Cause for This—It is Not Wise to let Customers Leave Thinking Your Prices Exorbitant, Even if You Do Not Want Their Business—They Will talk and You Will Suffer.**

What is a sanitary and heating engineer to do when brought face to face with the old objection, "Your prices are too high?"

This, of course, applies to job work. On contracts the plumber is competing with men in his own line, and his process will not differ greatly. It is not so, however, with lines which may be bought from others than plumbers.

Two or three instances of this nature have confronted members of the trade in the past fortnight. One man was asked to mend a large boiler—one of the kind that women use when washing clothes. The bottom of this was almost completely gone. At once it was evident that a whole new bottom was required and the plumber estimated the cost of this at 75c.

"What," said the woman who had brought in the boiler. "Why, I only paid 35c. for it at ———," mentioning the name of a well known department store.

#### Another Objection.

Another sanitary engineer was asked for some stove pipe. The price of this he quoted at 12c. a length. The purchaser here, too, made an objection. It was a man this time, and he said, "I can get stove pipe for 5 or 6c. a length."

What were the dealers to say?

The truth of the matter was that the lady had bought her boiler for 35 cents.

Of course it was also true that the bottom of this had worn out, but she would not at once connect this with the price—35c. Rather she would think the plumber was robbing her when he wanted to charge 75c. for fixing the boiler.

#### Worth Making a Fight.

But here were the facts. That boiler, as originally bought, was made with coat tin—mighty little tin to it. The plumber, on the other hand, was purposing to use, charcoal tin—a tin which he felt would give service. It was this that made the difference. He did not know whether he could explain this to the customer, but he determined to try. He spoke of the different cost of the different tins. He showed the tin he was going to use. Then he pointed the moral that the cheap tin, of which the boiler was made, would not give the service—had not given the service, for at the moment it was full of holes. He took this trouble, not because he particularly wanted to mend that boiler—even at the tremendous sum of 75c. there was little profit in this; but the man determined that it would not do to have a customer going away with the impression that he was a business pirate. The woman would probably express her opinions to others, and a great deal of harm would result.

There is an old Scotch proverb which says: "They say. What do they say?"

# Supplying Refrigeration in Apartments

Details of an Installation Which Calls For a Central Plant in Basement—Compressor is Operated by an Electric Motor.

A METHOD used for supplying refrigeration in an apartment from a central plant in the basement is illustrated in the accompanying drawing of a typical installation. It will be noted that four apartment house refrigerators are located directly above each other on the four floors, these boxes being cooled by the circulation of cold brine. This brine is taken from the tank which is located in the basement, by means of a circulating pump and circulated through risers to the different boxes on the floors above, each box having separate connections with regulating valves, so that the same can be cut in and out of service, the brine after passing through the coils returning direct to the tank.

Usually the ammonia compressor is operated by an electric motor, and in the brine tank there is placed a certain amount of direct expansion ammonia coils which are used for cooling the brine. The liquid ammonia is allowed to enter these coils through an expansion valve, this valve being similar to a needle valve.

The pressure in the expansion coils is usually kept at about 15 lbs. The liquid ammonia expands in these coils and is taken by the compressor and compressed into the ammonia condenser. The ammonia condenser as shown is of the double pipe pattern and made of 2-in. and 1½-in. pipe.

The cooling water which is used for relieving the ammonia gas passes through the 1½-in. pipe of the condenser, and the ammonia gas coming from the compressor at a pressure of about 150 to 170 lbs, travels between the 1½-in. pipe and the 2-in. pipe. The effect of the cooling water, and the pressure that is on the gas causes this gas to liquefy and return into a liquid receiver which is placed at the bottom of the condenser. From this liquid receiver the ammonia liquid passes to the expansion valve again and is allowed to expand from liquid into gas, at which time it cools the brine and is taken by the compressor again and forced into the ammonia condenser. This is similar to the action of ammonia in a refrigerating plant.

With this construction the refrigerating machine can be operated two or three hours in the morning, and the same at night, and, while the refrigerating machine is shut down, the brine pump can be kept in operation circulating the cold brine from the tank through the boxes. In this way a steady temperature is assured in all of the boxes without the re-

frigeration machine being kept continually in operation.

The system eliminates installing any brine tanks in the refrigerators. All that is necessary are the brine coils which are shown in the sectional view.

## Election of Officers.

Winnipeg, Man.—At a special meeting of Plumbers' Union No. 334, in Trades' hall, the semi-annual elections were held. President, John Strachan; vice-president, James Allen; financial secretary, H. Wolverton; recording secretary and business agent, T. F. Wood, were re-elected. The second vice-president is Dick Conway, and the assistant secretary, Ben Russell. The executive committee are: R. Purdy, W. Cooper, W. Wolverton, Sid Wood, A. Lawrence; the

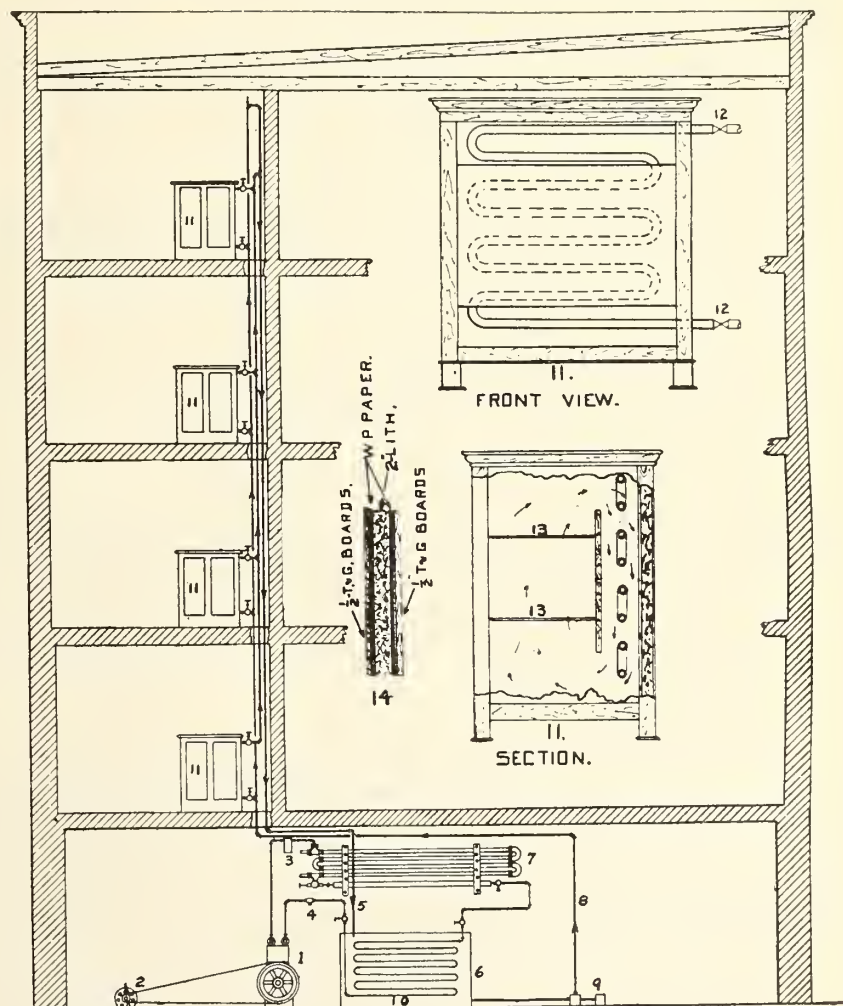
trustees R. Purdy, W. Cooper; tyler, R. Robertson. President Strachan and W. Cooper left for Milwaukee where they will be representatives of the local union at the annual convention of the plasterers from Sept. 30 to Oct. 10.

## Plumber Married.

Saskatoon, Sask.—W. G. Armstrong, financial secretary of the Plumbers' and Steamfitters' local, was married to Miss Frankie S. Bell of Sudbury. Mr. and Mrs. Armstrong are spending a few weeks holidaying in Toronto and Guelph, and afterwards will reside in Saskatoon.

## Partnership Dissolved.

Victoria, B. C.—Minckler & Joyee, plumbers, have dissolved partnership.



1-COMPRESSOR.  
2-MOTOR.  
3-OIL TRAP.  
4-SCALE TRAP.  
5-BRINE RETURN.

6-BRINE TANK.  
7-AMMONIA CONDENSER.  
8-BRINE FEED TO BOXES.  
9-BRINE PUMP.  
10-DIRECT EXPANSION COIL.

11-REFRIGERATORS.  
12 VALVES.  
13 GALV. WIRE SHELVES.  
14 DETAIL OF INSULATION.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, OCTOBER 1, 1912

A CLOSE student of conditions in the sanitary and heating trades made the statement recently that "more system was the crying need of the plumber." He was right. The sanitarian has given too much thought to the mechanical side of the business. He can instal a heating system to perfection but his knowledge of bookkeeping is rudimentary. He can wipe a joint but he can't collect an account. His work is satisfactory in every respect but his bank account is woefully short.

What is needed is a close business system to govern buying, estimating, collecting and managing. When strict business methods are applied, the sanitary and heating business becomes profitable—and only then.

The contribution in this issue on the question of system is an admirable one. A practical man outlines the practical steps he has taken to put his business on a business basis. It is well worth reading.

IT HAS come at last. The lady plumber has arrived. Woman, lovely woman, has been invading every field in turn—law, medicine, dentistry, engineering, merchandizing. And now she has decided to show mere men that she can wipe a joint or lay out a heating job with the best of them.

**THE LADY PLUMBER.** A news despatch gives the intelligence that 150 young women are about to go to school to learn the plumbing business. They are very much in earnest. They are convinced that they can become thoroughly skilled and intend to go right through and learn the trade.

THE CRY is for men. The church is crying out for men. Employers are clamoring for men. Canada is booming and the one great need is men. It is a gratifying condition, yet one which may cause great inconvenience if the cry is not answered, a fact which

**PREPARING MEN MEET NEED** many sanitary and heating engineers are now ready to admit.

At present there is no scarcity of work. Repairs have started, new work is still being done. The need is not work, but journeymen to do it.

Canada's growth is not something which will cease. The large work of this season is but a sample of that to come. Therefore, the masters have to expect the need of many workmen in future years. This being so, it would

seem that they may well devote some time to a consideration of the best means of securing competent helpers. Something toward this end is being done in Montreal by means of a Plumbers' School, of which one teacher is a member of the Master Plumbers' Association. Perhaps such a school might well be opened in other places, where the obstacles in the way are not so great as in the Royal City.

AS LAST year a goodly number of plumbers are finding themselves not only short of soil pipe, but unable to get it—at least as quickly as is desired. The reason of course, is not so much that soil pipe is scarce, as that orders were not placed early enough. Those who remembered last year, and forwarded their requisition in good time are rejoicing now in sufficient soil pipe to do their work. There are things in the past that it is well to forget, but there are other things that may well be remembered, for they have a very valuable bearing upon the future.

### KEEP TAB ON YEAR'S PROGRESS.

The sanitarian must keep close and constant watch on his progress. It is the only way to be sure of success.

When an engineer is running a train from Montreal to Winnipeg, he doesn't wait until he gets to his destination to see if he is on time. He knows that if he hopes to reach Winnipeg on time he must make a certain progress all along the line, so he watches the time at every station.

The plumber must do the same thing. He commences each year bent on achieving a certain volume of business during the ensuing twelve months. He must not wait until the end of the year to ascertain his progress towards this end. He must figure out just how matters should stand at certain periods of the year. He must figure out what his business should be for each week, for each month and each quarter and strive to attain or exceed that amount. If at any set period he finds himself behind his schedule, he must put forth greater efforts during the next period to gain up on what has been lost.

But unlike the engineer, even if he is ahead of his schedule he should work for greater things. This year especially the plumber should show a larger increase than usual because the country is in general very prosperous.

# Lead Prices---Past, Present and Future

THE sharp advances made by lead—advances which have taken the price on the primary market from £13 19s. 0d. a year ago, to £23 15s. 0d. now—have attracted the attention of all careful students of metal prices. There have been rapid fluctuations in this market before, but never anything like the rapid changes noticed in the last twelve months. A leap of almost £10 in as many months is unprecedented.

The chart shown herewith gives some idea of the history of lead. It shows what has happened. Therein lies the weakness of charts. However, such explanatory information may be gathered from various sources. It is information which is exceedingly interesting too, and interesting just now particularly because of the light which it seems to throw upon the future.

## The High Water Mark.

The chart, it will be seen, indicates that lead in 1856 was selling at £23 19s. Never since then has this price been equalled. But look at the price to-day. On Monday London quotations were £23 15s. and the market still strong. Is the old high water mark to be surpassed?

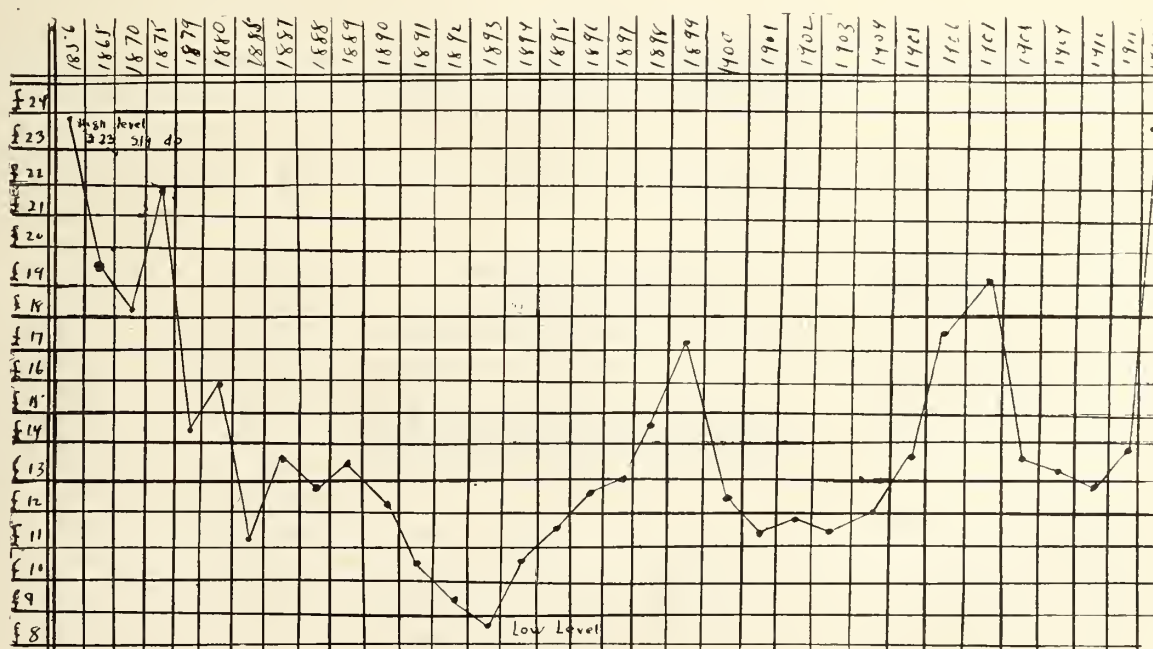
There was a cause for high lead in 1856, as there is a cause now. But the causes are different. In 1856 the air was full of wars and rumors of wars. The correspondents then were not forced to write about the Balkans, where "war will break out in the spring." They had a grave state of affairs to recount in India. The mutiny, there, resulted in the consumption of great quantities of lead. It was that more than anything else, perhaps, which caused lead to reach its high mark.

To-day, things are different. A syndicate, a clique, whatever you may call it, has got control of the market. It has forced the situation and seems bound to force the

price still higher. No less than £30 is said to be the aim. Perhaps it may be attained, for the syndicate is being greatly helped. There is a tremendous call for lead. The recent strike in England interfered with shipping. All these things make the advancing of prices more easy. All these things, indeed, have perhaps made high prices a little necessary. Yet with the syndicate, after all, lies most of the responsibility for the present situation.

How did this syndicate, or group of men, obtain control? In the early eighties lead slumped. The bottom fell out of the market. Then in the early nineties a somewhat similar state of affairs arose. Lead sank to its low level. In '94 the metal was quoted at £9 8s. 6d. The price was so low that it did not pay to mine lead. Operations, therefore, were discontinued. Stocks naturally fell off. Stocks became very low, and the men who had been anxious to gain control seized this opportunity. There was no great reserve to hamper them. They could do with the market more or less what they wanted.

But there is a point at which control ceases to be possible, and there is some thought that this point is being nearly approached just now. Trouble in Mexico has prevented mining there, and has thereby kept down the world's supply of lead. But even more than this the low prices at which lead has been selling have hindered operations in many mines. This is true, not only of Mexico, but of Spain. Now at £18 or more these mines could be worked profitably. With lead at the present figure, therefore, it becomes very evident that some thought of re-working these mines will be entertained. Note the result if work is recommenced. The supply from these sources would be put on the market. There would be more lead for immediate shipment and more for futures. The scarcity would be relieved. Prices would naturally fall.







# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## SETTING A "DIRECT INDIRECT."

Editor Plumber and Steamfitter.—I have several radiators to set where it is required to suitably ventilate the rooms from the outside. I wish that you would show a drawing or a cut that will

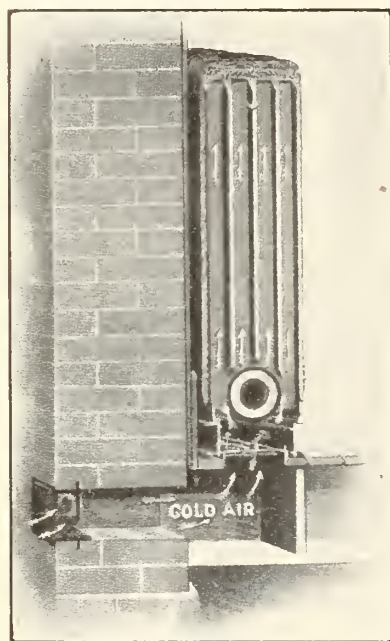


Fig. 1.

make plain to me a good way to do the job and have it work. I hope that you will publish it soon as it is getting well on towards cold weather.—J. H. Brascoe.

We publish in Figure 1 a cut where the air from the outside is taken into the room. It will be observed that the air is well distributed through the flue surface of the radiator. Dampers are in that base that can be suitably adjusted to the temperature outside and if the mercury should happen to "drop clean out of sight," as frequently happens, the damper can be closed and the radiator will then act as a regular direct radiator.—D. C. H.

## WILL VACUUM HEATING SAVE FUEL?

Editor Plumber and Steamfitter.—Can you tell me whether or not a good vacuum heating steam job will save any coal over the ordinary steam heating

job and if so how much on the average?—X. Y. S.

If rightly put in it is claimed that vacuum heating will save anywhere from 25 to 35 per cent. over the ordinary gravity steam job. Observe that we say "if rightly put in." Many vacuum jobs are "botched up" and for that reason do not give good results. We would suggest that you visit several plants that are said to give good results and question the owners for yourself. You will then have definite practical results and be able to make your own decision in the matter from the information you secure.—D. C. H.

## WHICH LINING FOR THE TANK?

Editor Plumber and Steamfitter.—In an out-of-town plumbing job I will have to line a tank in the attic. Which would you recommend using, a lining of copper or one of lead?—B. F. J.

The lead we believe would last the longer if there be no chemical agent in the water to act on it. We would suggest that you take some of the water and have it analyzed. You will then be in shape to decide just what kind of material will secure the best results. If it is found that iron or steel would answer what would be the matter with trying to "switch" the customer to a pneumatic system whereby he could have the tank installed in the cellar and thus do away with the constant menace of an attic tank? We believe that it will pay you to investigate thoroughly and, if possible, make the attempt we suggest.—D. C. H.

## "HOOKING ON" TO INSIDE RADIATOR NIPPLES.

Editor Plumber and Steamfitter.—I have a lot of second-hand radiators to

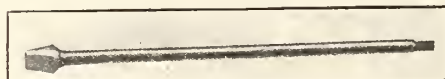


Fig. 2.

make tight and it does not seem to be an easy matter to catch the nipples inside. Please illustrate a good kind of a wrench for the purpose.—S. G. B.

If you examine the inside of one of the radiator nipples you will find there what are called "lugs." The wrench shown in Figure 2 will slip inside these "lugs" taking a firm hold. A little patience and "beef" on the gripping wrench will do the rest.—D. C. H.

## CONNECTING WALL RADIATION.

Editor Plumber and Steamfitter.—Will the wall radiators work as well set the long way horizontally as if set vertically?—W. T. Newman.

We do not understand why they would not. We show a cut of where one is so

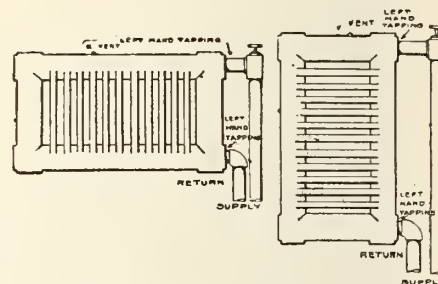


Fig. 3.

connected. This radiator might also be set up on the one pipe plan steam being admitted to the radiator where the return is now shown entering it in Figure 3.—D. C. H.

## IN ORDER TO HAVE LESS LEAKS.

Editor Plumber and Steamfitter.—What is the best way to get rid of all the small leaks that many times show up when a job is tested?—Helper.

Examine carefully all of the fittings to be used on the job. Throw out all the defective ones. It will pay. Next look over the tools used in cutting the threads. If the dies are dull or broken have them fixed or get new dies. Many leaks come from the sources just mentioned and the fitter or plumber is not to blame if you insist on his making use of tools and fittings that belong on the scrap pile. In case some of the fittings are tapped out too deep, you can wind the thread on the pipe with strands of candle wicking which will take up the loose space and save a leak every time. Finally if any leaks do appear, after you have taken the precautions men-

tioned, they will be easily caulked.—D. C. H.

#### AIR CIRCULATION FOR INDIRECT.

Editor Plumber and Steamfitter.—Will you be kind enough to show me how I can provide for the intake of air

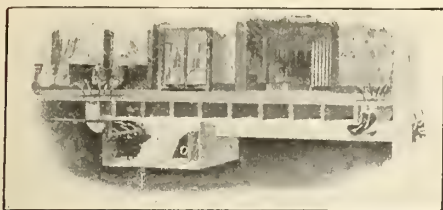


Fig. 4.

for an indirect radiator so that the air can be taken from out doors or from the house as may be desired?—M. J. Conway.

The illustration we publish shows a good way to handle the air in the manner the subscriber desires. In Figure 4 it will be observed that there is a damper in the wall and also in the floor. We believe that if arranged as shown no trouble will occur and that a good motion of air in the room will result and that inside or outside air can be used as may be desired.—D. C. H.

#### DON'T TURN BATH INTO A STORE ROOM.

Editor Plumber and Steamfitter.—I have a customer who has some (what seem to me, at least) old-fashioned ideas. He has been fighting both myself and the architect to have a lot of lockers, shelves and closets put in the bathroom. I tell him that the bathroom is no place for such contraptions but he can not see it that way. Finally I thought of you and he agreed that he would be glad to see just what you said about the matter. So now if you will give an opinion I would be glad to have it no matter which way you may say. Trusting you can see your way clear to answer soon, I remain,

Yours truly,

George G. S.

We believe that the bathroom should be used for bathing purposes. This does not mean that it should be used either as a dressing room or a store house. If there are places made where all sorts of goods can be stored they are bound to accumulate there. Don't turn the bathroom into a shed or an attic. If there is to be any extra space at all, use it towards making the bathroom larger and more airy. It will be found that such a bathroom is much easier cleaned, more wholesome and much better looking. Put nothing in the bathroom but what is absolutely necessary to the best modern sanitary necessities.—D. C. H.

#### DRAWS TOO MUCH COLD WATER.

Editor Plumber and Steamfitter.—On a plumbing job that I recently had to make some repairs on the hot water was a very long time coming to the bathroom. Probably several gallons ran out before it came. Can this be avoided and if so, how?—N. E. W.

That plumbing job was probably put in on the old plan of doing the work. It was not a circulating job. The pipes ran to the boiler and in each pipe was a long line of cold water that had to be forced out before the hot water could possibly arrive at the faucet. If a circulating main be installed and branches taken off to the several fixtures you will find that hot water will be drawn almost immediately.—D. C. H.

#### PROPER USE OF PIPE HANGERS.

Editor Plumber and Steamfitter.—Is it necessary to always use some temporary wood hangers nailed together for holding up the steam pipes? The fitter I am working with always does so and I think that he loses time by doing it.—Apprentice.

You are right in your opinion; that is in nine times out of ten. Sometimes the regular pipe hangers are not to be obtained in time to use them and, rather than hold back the job, the temporary hangers can be used. One reason why so many fitters use the wooden hangers is that they are not mechanics enough to lay out the line and have it come right. It does not seem possible that men calling themselves "fitters" could be so dense, but they are just the same. Use the regular pipe hangers whenever you can and save time, annoyance and have a far more safe job to pull on as you go along.—D. C. H.

#### HOW MUCH STEAM PRESSURE?

Editor Plumber and Steamfitter.—I am not a steamfitter or a plumber, but I have a job in my home that does not seem to work right. It takes at least five pounds of steam to heat the house when we have any kind of cold weather. Now I want to ask you if this is as it should be, and if not what can I do about the matter?—Traveling Man.

There are several things that might be the matter. You might not have enough radiation, or the steam pipes might be too small, or the boiler too small for the job, or you might not be firing the boiler right, or burning the right kind of fuel, or the house an old one that leaked out the heat as fast as it could be created. We might mention other points such as improper air valves, etc., but believe that we have given you a few things to look after. Under ordinary conditions your home ought to be heated with no more than half a pound of steam at the most

We should advise you to find a steam job that resembled yours in size, a job that is working perfectly. Then find out the contractor who installed it and have him look over your job. He would most likely be able to tell you at once just what was the matter. We can't with no more information than you have given us.—D. C. H.

#### NIPPLES FOR PIPE.

Editor Plumber and Steamfitter.—What are the different names and the lengths for pipe nipples?—M. L. R.

Close nipple, its length allows the fittings to face up.

Shoulder nipple, slightly longer. Has a shoulder between the fittings.

Short nipple, generally about three inches long.

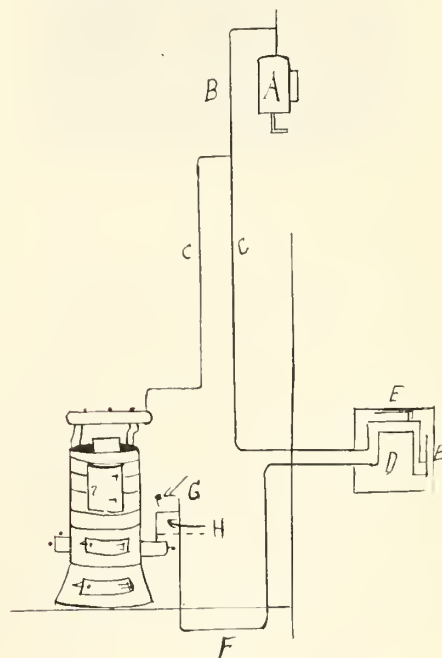
Long nipple, generally anywhere from three to six inches long.—D. C. H.

Editor Plumber and Steamfitter.—Enclosed please find rough sketch of leg riser for purpose of heating two rads in a garage from house boiler. Will you kindly publish it in your next issue with any changes you think would be to advantage, and oblige,

Steamfitter.

Sketch as follows.

- A. Expansion tank.
- B. Air vent from leg riser.
- C. Leg riser.
- D. Garage.
- E. Rads in garage.
- F. Return under cellar floor.
- G. Air vent.



H. Keep cold water from backing up.

We would suggest that in a case like this that the leg be dispensed with and a pressure regulator used as providing a more reliable and constant heat.—D. C. H.



# Tips for Helpers---By "Phoenix"

## Chapter 6.

A party wrote to me the other day and wanted to know whether or not I thought a man working at our line of business should own his tools and about how heavy a kit of tools one should carry.

It seems to me that I have written enough upon that subject in the past, but there is always some who has not read their paper as they should, or some who are just starting and so I will write something on the subject once more. There is a great deal that can be said both for and against the question. Both parties (the man and the master) have certain rights and in most cases each views the question from a different angle. I know some fitters that, if they had to buy their own tools would not do a day's work at the trade. This does not mean, necessarily, that they are "bums," but that work has been slack, sickness and a dozen other reasons.

In some places you will find it the custom for each man to own his kit of tools up to sizes for handling 2 in. pipe. You could not get these men to work in

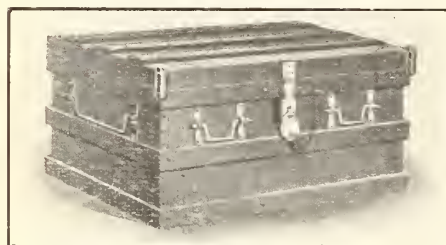


Fig. 1.

any other way. In other cases the owner of the shop buys the tools and some of the men look after them just as carefully as if it was their own money invested. It strikes me that it is mostly a question of the real manhood behind both parties. If a fitter or plumber is on the square, a first-class workman and is well known to the "boss," I can't see why the boss should be afraid to fit out that workman with any kind of a kit that he wants, provided he can not, or does not see fit to furnish the tools himself.

On the other hand, such a workman is generally able to buy his own kit if he chooses and many of them do so. They claim that when they own their own tools, they, alone work with them and they are not obliged to give the tools up to help out any shortage that there

may be in rush times in the shop when it has on extra men. Laying aside any prejudice in the matter, I should say that it was largely a question to be determined by common sense and local circumstances. I well remember the first tool chest that I had to "wrestle" with. It was long enough to take in a full grown chain wrench and built, if I remember rightly, of a kind of wood called "water elm." I know that the trainmen used to swear a blue streak whenever they saw that chest coming their way. The old man told the carpenter to "make 'er boomb proof," and I guess that he did. When packed, that chest weighed something like 600 pounds and was certainly a man killer to shift around.

There is no use, whatever, in having such bunglesome chests. A chest of rolled sheet steel is lighter, stronger and has sufficient room to carry all the tools necessary. Glance at the chests shown in Figs. 1 and 2 of this article and see for yourself. They are neat, clean, strong and look workmanlike. You'll have to lift on them when they are packed, but you won't see stars while doing so. They are well arranged inside and mighty convenient and I carried one for several years and, except some dents, it was just as good as it was the day that I bought it, and far lighter than the "water-elm" chest.

As to the tools necessary, opinions differ. Some workmen might have "slathers and gobs" of them and still fail to do a good job. Other men will make a pipe wrench out of a piece of rope and any old stick and make a tight joint. Strike a happy medium and you want a good lay out in the chest up to and including the tools that will handle 2 in. pipe and fittings. This includes stocks and dies, wrenches, cutters, a small vise, an oil can, a couple of hammers, some well tested cold chisels, monkey wrenches, pipe reamer, pliers, hand saw, brace, set of bits, a 30 in. gimlet, plumb bob and line, files, screw driver, level and pocket level. I suppose that I could mention a lot of other things, but in many shops you'll be lucky if you get the lay out just listed.

The two tools that are greatly misused are the pipe wrenches and the pipe cutters. I am going to give a few rules for the use of the cutters for a pipe cutter that is on the bum can cause a whole lot of trouble later on.

## Rules for Using Pipe Cutters.

1. See that the cutter is free from dirt and not gummed up.
2. Put in new wheels whenever the cutter wheels get dull or nicked.
3. When putting the cutter upon the pipe, open cutter wide enough to go on easily. Do not attempt to spring it on the pipe.
4. Take time to occasionally examine the pins on which the wheels revolve. If the pins are grooved put in new pins. Your cutter will then probably run true.
5. When you first put the cutter upon the pipe do not turn it down too hard as it will make it cut too hard and in making the revolution around the pipe you are apt to throw the cutter out of line.
6. A little oil put on the pipe before the cutter is started will help.
7. Have a nail handy to hang the cutter on instead of throwing it down anywhere. This will keep it free from dirt and make it easier to wipe up when night comes. It will also be in a place

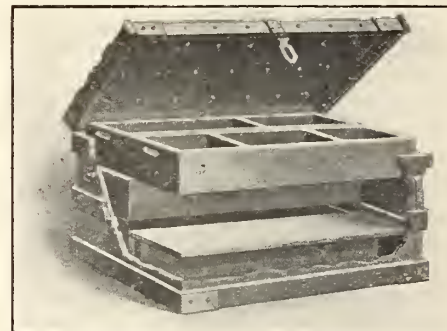


Fig. 2.

where you can always find it when needed. Get these habits for they save much time, temper and trouble.

An untrue cutter will cut an uneven pipe; the dies will not catch on as they should. A bum thread is the result, which generally causes a leak. The leak may do a lot of damage before it is discovered and then said leak must be stopped. You can easily see that it all starts from a small thing, the cutter.

The wrenches appear, in some cases, to be used for most anything. They are used for hammering, as a lever, and as nipple wrenches, all of which practices tend to put the wrench pretty much in the blink. A man who so misuses the tools is not a workman; he is just a

Concluded on page 17.

# System in Sanitary and Heating Business

A Thorough Resume of Conditions in the Trade — Systems to be Followed in Working Business Under Seven Heads; Buying, Selling, Estimating, Executing, Collecting, Accounting and Shop Management.

I HAVE pondered long and deeply on the subject assigned me, namely "System," and have arrived at the conclusion that there is but one thing to do and that is to jump right in and endeavor to tell you, in as few words as possible, what I know about the subject.

Noah Webster says that "System" is "an assemblage of things forming a connected whole."

There is no question as to the number and variety of things in the plumbing and heating business, which is all the more reason why "System" should and must prevail to make of the business a success.

I should say that the business should be divided into seven heads, as follows: Buying, Selling, Estimating, Executing, Collecting, Accounting, and Shop Management.

Taking them up separately, we first encounter the Buying, and it should indeed be first, for we must buy before we sell, and to sell right we must buy right. It is one of the first duties which falls upon any man in this business, for after securing the necessary license and renting a store (I mention renting the store because any concern worthy of the name must occupy a store-building and do business on a business basis, instead of catering to the alley-end of the business as do some misguided individuals who attempt to conduct a plumbing business in a vacant stall side of Old Black Joe or in the lean-to formerly occupied by the Plymouth Rocks), he finds in this city a certain gentleman in the Security Bank building who would hold converse with him, that is, of course, assuming that he intends to purchase a certain percentage of his ware from the local jobbers. Accordingly he calls upon the before-mentioned gentleman and is asked divers and sundry questions as to his parentage, his attachment for the flowing bowl, his ability as a joiner of pipes and a wiper of joints (noses not mentioned), his standing with the grocer on the corner, his birthplace, a minute description of his boyhood days with an accounting as to the number of days he skipped school, some few lines as to his apprenticeship and his time in the trade, a few pointed questions as to whether he is a regular old-time party man or a Socialist, whether or not he wears woolen underwear in the summertime and incidentally is requested to show conclusively how much of the world's goods he has laid by for this momentous occasion. If he secures a passing mark on his ex-

## A THOROUGH SUMMARY.

*The accompanying paper was read by W. W. Hughes at the last convention of the Minnesota Master Plumbers' Association. It contains such a wealth of information and practical hints that it is reproduced for the benefit of readers of "Plumber & Steamfitter."*

amination papers from the gentleman, he makes his way to one or more of the various jobbers, with which Minneapolis is blessed in numbers, if not in quality, and proceeds to make certain selection and purchases for the fitting-up of his show-room and stock-room. At this point, it might be well to note that you as a master plumber, are the man with the whip hand. The jobbers cannot, neither do they desire to enter the contracting field, and in this particular they certainly show good sense, for they want sure profits, not the chance profits sought for by the master plumber.

Right here, let me state that you may have a system, or I may have a system, but it takes something besides a system for any business to make good, it takes some hard, hard work; it takes organization and brains; the pyramids would never have been built without system, organization and brains, and that is just what our business needs to-day, brains, brains, and lots of them! brainy men that understand system, brainy men that have common-sense, brainy men that have organization ability, and brainy men such as excel in all things that go to make other business successful. I hold that you men who have started in life equipped with no heritage save that of manhood, industry and common-sense, and who have made good in this your chosen calling, have done more and are a greater credit to the nation than are such men as you all know, it is not necessary to name them, born with gold spoons in their mouths and coming into what should be the prime years of life with their minds and what little brain they have centred upon lust and lust alone. I contend that it takes more brains and common-sense to build up and conduct a \$100,000 plumbing and heating business than it does to fill the

president's chair of certain well-known corporations.

## The Art of Selling.

Selling is an art within itself, and an art much neglected by the plumbing fraternity. The salvation of the business lies in its becoming a mercantile business. When a man sells his wares piece by piece, it is absolutely necessary that he know their cost; and knowing their cost it is easy for him to add the proper percentage of profit and get it; and a profit thus acquired has no drawbacks, it is not a gambling chance but a sure thing. Sell your wares as quick as you can and do not allow old stock to accumulate; rather sell it at a sacrifice and have the money on hand to do business with than to carry it in stock. I believe in disposing of old material without delay.

## Cannot Go Astray.

Estimating has been the subject of so much discussion that I rather fear butting in on this part of the game, but I will say this, that if a man give due and careful consideration to the items which go to make up a bill of materials and will bear in mind his labor records, he cannot come very far amiss. First of all, know your material costs; next, know the amount of material required by having checked up some former work, and lastly, have at your finger tips full and complete knowledge as to the labor-costs on work already done. A card system offers an ideal method of carrying this information, classifying same alphabetically. For street work, it is advisable to use a card system with a division according to the streets and avenues. By so doing, you can readily pick out the cards containing the records of the work on any certain streets and be thus enabled to glean such information as will make it possible to make a reasonable estimate for labor, always bearing in mind that it is policy to leave a little lee-way for the slips that will sometimes occur. Use an itemized form for all estimates; figure carefully; and if there is any question as to the quality of the soil, refuse to make a bid and insist on day-work, bearing in mind that it is much better to lose a possible job than to lose a positive piece of money.

## The Necessary Equipment.

Shop Management means all that the name implies. An ideal shop consists of a well-arranged show-room, carefully stocked with live, up-to-the-minute merchandise, not a museum of



antiquated hopper bowls, sometime passe foot and sitz baths, antique marble lavatories with decorated basins, not forgetting a good collection of dust, dirt and microbes; an office partitioned off from the rest of the store and equipped with safe, desks, filing cabinets and such other essentials as go to make an ideal office for the ready transaction of business; a brass room, under the weather eye of the man in the office, equipped with proper shelving and boxes and cabinets for the storing of the various articles of value which a plumbing shop of necessity must have; a shop, well-lighted, properly equipped with cutting-tools, vises, emery-grinder, grindstone, drill-press, bench-scale, fitting boxes and shelving, fitting boxes properly marked as to contents, a yard in which may be stored your stock of soil-pipe, stone-pipe and fittings, wrought-iron pipe, sewer lumber, tool carts, fixture crates, etc., with the further provisions that this yard is best fitted for its purpose when enclosed on three sides and covered over and fitted with electric lights; a wagon-shed and barn connected to and forming a part of above mentioned yard, complete with electric lights, sewer and water connection, and last, but not least, a tool-room, in which are to be kept all of the tools of the business, properly classified and arranged with cabinets for repair parts (and it might be well to add that the cost of good tools is so small that it is folly to waste very much time repairing the old ones; have a scrap pile and don't be afraid to use it). Keep your tool department well supplied so that in case of an emergency you can get a new tool out of stock without having to make a trip to the jobbers. By having a tool-room, you are able to keep a record of your tools and to see that they are returned after being taken out. Given the above equipment as a starter, there is absolutely no reason why everything should not have a place and be kept in that particular place: by so doing you will avoid duplicating stock; you can carry a greater assortment of stock; you will avoid lost time looking for certain articles and tools; and you will make it possible for a green man to step into your place of business and learn the ropes in jig time. I do not approve of using the basement for a shop nor as a place of storage, as the materials used in a plumbing establishment are too heavy and cumbersome to admit of their being carried first down into the basement and afterwards out of it. In our tool-room, we have taken two pieces of 2x4 and nailed them to the floor and to the ceiling on an angle of about 70 deg., and on these we have screwed two 8-foot lengths of steel hook-plates, such as are used for steam-coil work, and we find

that this makes an ideal rack for stocks. In our store-yard, we have made a rack for wrought-iron pipe out of two 12x12 timbers laid on the ground, on which the pipe is placed and each size is kept separate by means of short pieces of 1-inch pipe sunk into the timbers about one foot apart and extending to a height of one foot above the timber. Being right side of the alley and under cover, we find that it is easy to place pipe on it and easy to load pipe from it to our wagon, and by being under cover the pipe is kept free from snow and rain, a merciful provision for the man that has to handle it. A gasoline tank underground is a mighty wise precaution, and the expense to a man in the trade is nominal. In our case we use a 120-gal. range-tank that had started to leak; we soldered same carefully, gave it a week's test under city pressure, and then buried it six feet down, equipped it with a filling-pipe and a pump at a cost of about \$5, and are reasonably sure that it will last for many years to come.

## Providing Toilet Facilities.

Right here, I would add the advisability of having proper toilet facilities for yourself, your employes, your patrons, and the stranger within the city gates. The toilet-room in our shop is used by a number of the business and professional men in our part of the city, and they tell me they appreciate the fact that they have the privilege of its use, together with a lavatory which is connected to both the hot and cold water, supplied with soap and a roll of paper towels. It takes, it is necessary, and it makes business, and in order to promote the further advantages of public-comfort stations we should fall in line and provide such facilities as may be within our power, thereby impressing upon the public in general the convenience and necessity of places of this character.

## Handling Contracts.

Executing a contract after securing one is really the vital part of the business and is worthy of a deal of study. I have often likened the plumbing business unto a game of checkers, moving the men hither and thither in an endeavor to reach the king-row of profits. Arrange to have the material on the job ahead of the men; have tools worthy of the name and plenty of them; have the right kind of shop-rules and run the shop according to those rules; arrange to have your men go from one job to the next instead of hiking down to the shop between jobs at an immense loss of time and money; have the right equipment for placing the material on the job instead of using your first-class employees for pack-horses (you might just as well haul coal with a team of carriage horses). Remember, too, that a good repair-man may not be worth a

darn on a house-job and vice versa, and and that a good man on a house-job may be lost on a contract-job. The plumbing business has its all-around men, but it is rapidly becoming a business of specialists.

## A School of Instruction.

Accounting is one of the weak points of our business. We are a class of mechanics instead of being men with business training, and it is the one point to which we should give more time and attention. A school of instruction in connection with this organization would be a grand thing. To begin with, have a well-arranged office, place your desk within an enclosure of some kind, and face it so that they who enter your store will not be able to look over the books and papers on your desk. Keep your statements and bills under cover, instead of hanging them on a hook on the wall, inviting inspection by all who enter. Letter-files are not expensive, and are mighty handy. Have a set of books and employ a man of ability to care for them, and they will repay you time and again.

## Getting the Money in.

Collecting is treated last, but it is by no means the least. A whole lot of collecting can be done in advance by first ascertaining a man's credit-standing and refusing him if it is doubtful. A credit-guide issued in this city covers the ground in pretty good shape and should be a part of every man's shop-equipment. After doing a job, bill it immediately and try to collect it while the matter is still alive. You know it is a fact that the man who is most anxious for a plumber on a hurry-up job is usually of very poor memory as to his needs when the bill comes in. Watch the time-limit on the slow ones and file your liens in plenty of time.

As to the books necessary for the proper accounting system, I would say that a whole lot of lee-way may be left right here, as it is absolutely impossible for any one to map out a system applicable to all businesses, nevertheless, the prevailing principles are the same. I use in my own business a loose-leaf ledger (because with it we are able to eliminate the dead timber from time to time); a journal (for various book-keeping transactions); a day-book (in which all jobs are charged, and it might be well to add that some firms avoid the use of a day-book by making out their bills in duplicate and retaining one copy in the office); a check-register; a cash book (the ordinary kind); an estimate book (itemized after any of the numerous forms to be had); a cost-book and also a system of cards on which to carry certain statistics, and a monthly statement book, drawn up the first of each month and showing the various resources and



liabilities and having the additional duty of showing that the books balance absolutely each month.

A system of this kind cannot be handled without a certain amount of work, but, even at that, it will be found to be a source of much knowledge as time goes on. I believe that I omitted a few details on the cost-book. This book is intended to show the cost of the various contract jobs, and can best be

handled in conjunction with regular forms drawn up for the purpose, on which may be noted the name and location of the job and a list of the materials sent there, with another column in which is noted the material returned from this particular job, following the checking up of which the balances may be carried into the cost-book and added together, thereby completing a record of incalculable value for future estimating.

## Avoiding Sub-Contract Whip-Sawing

It is not very long ago that the master plumbers of Montreal took exception to the system of sub-contracting for plumbing and heating work. They wanted the sanitary and heating engineer to tender direct to the architect or the owner, and not to a general contractor. Only thus, it was felt, would the plumber get his dues, and only thus would the good work be possible which is necessary if the reputation of the trade is to be maintained. It is not very long ago that the local association took action on this point, yet already the results have been splendid, as is shown by an instance which has just occurred.

### Owners Demand.

As a general thing the architects have fallen in with the request of the Master Plumbers Association. They have been giving the plumbers tender forms, so that these tenders come straight to the architects. Much good has resulted. But this week an individual, about to erect a house, insisted that a general contract be given. His belief was that this would save him a great deal of trouble.

What was the architect to do? He was one of those who had acceded to the master plumbers' demand for a separate heating and plumbing contract, holding that this was only fair. The architect finally decided that he could satisfy his client, the general contractor and the Master Plumbers Association. This is how he did it.

We will have a general contractor, said the architect, but I will name the ones to do the sanitary and heating work. The owner agreed, the general contractor agreed. The plumbers are tendering. They feel the action is fair under the circumstances.

What it means, of course, is that the plumbers will tender to the architect, who will award the sub-contract. Thus there can be no whip-sawing, such as so often happens where there is sub-contracting—with the attending blind-eye of the contractor to the installation of equipment which falls just a little short of the specifications. The master plumb-

er will do the work under the supervision of the general contractor. He will get his money from him, but the general contractor will be powerless to do the whip-sawing which, in so many cases, has made the sub-contract system a great evil.



### WHY SHOULD GAS PIPES FREEZE?

Editor Plumber and Steamfitter.—Please tell me why it is that gas pipes sometimes freeze up and cause the trouble they do?—X. X.

In the gas there is a certain amount of moisture which will condense and this condensation will freeze. For that reason the pipes should be given a proper slant so that no traps will be in the line of piping. Ream the pipes and if they run near a window or door protect them by winding or using pipe covering.—D. C. H.



## Gossip of the Trade

### A New Firm.

Summerside, P. E. I.—D. O. Pickering and Roderick Morrison have entered into partnership and will carry on business in the plumbing, steam and hot water fitting.

### Fred Smith in Fergus.

Fergus, Ont.—Fred Smith, of Guelph, is opening a store here and will engage in the plumbing, steam and hot water fitting and electric wiring business. He has rented a new store and will carry a large stock.

### Factory Being Built.

Sarnia, Ont.—Work at the new brass plant of the Mueller Manufacturing Co. is now well under way. The foundation for the brass foundry building is nearly completed and as soon as done the contractor will start at the foundation of brass finishing building.

### Get a Gun.

Kingston, Ont.—David Hall has an original ad. in the daily papers. At the top is a picture of a small boy with a

big gun. The ad. reads: "Johnny, Get Your Gun!" and hunt up that plumber who did this poor job and charged so outrageously! Johnny will not hunt for or shoot at us, because he knows that what we do—we do well. We are modern idea, thoroughly experienced plumbers, who know our business in all its varied branches.

### Tinsmiths on Strike.

Saskatoon, Sask.—The tinsmiths of the city are still out on strike, and the men say that they intend to fight the masters until a satisfactory settlement is reached. The local union has only been organized about six months, and up to the present no signed agreement has existed between masters and men. The first schedule, the masters refuse to sign.

The chief clause which has caused the trouble reads: "The rate of wages shall be 52½ cents per hour."

The masters believe that the men at present are getting all they earn, and intend to stand pat. They state that the strike is not in any way tying up work, and that yesterday a number of men returned to work.

### Have Removed.

Knechtel & Co., of Brandon, have removed their plumbing business to Saskatoon.



### TIPS TO HELPERS.

(Continued from page 15.)

plain, well crank. That's the mildest name I could apply. These tools are what one makes his livelihood with and there is just as much reason why they should be kept in order as there is for your best suit of clothes. More in fact, for without the use of the tools you probably wouldn't have as good a suit as you now have.

A man is known by the company he keeps, they say and likewise a mechanic is known by the tools he has, provided he has the jurisdiction of the same.

As for the bosses' end of it, I never could understand wherein it paid to give a man a set of tools that were on the bum.

Most any kind of mechanic will turn out from 40 to 50 per cent. more work with good tools than with poor ones. Besides he will do it more willingly and be in far better condition for the next job. The experiment of making "bricks without straw" failed some thousands of years ago and the principle applied today will fail every time you try it out.

Just a little good "horse sense" exercised along the lines mentioned in this article will save much misunderstanding in the shop and a whole lot of that "edgewise feeling."



# Complete Course of Sheet Metal Work

By L. W. KOSER

Prob. 14 is the same as Prob. 10. The only difference being that the pyramid does not go to a point.

Draw the base line A B C D of fig. 1. Then the outline P S S of fig. 2, and draw the line R R at the desired height. Bring the T square against R R, and draw the lines E H and F G of plan. Connect E and F, also H and G.

Draw a dotted line into the centre O. Lay out the line V U fig. 3, equal to O B. Make the line V F equal to P P of fig. 2. Draw a line from F to U. Also draw a line across from R R, thus getting the point X.

With the point of the compass at F, and the lead at U, and with any centre as G, describe the arc N M.

Then with the point at F, and the lead at X, and with G as a centre, describe the arc Y Z.

Lay off the perimeter A B C D on the arc N M. Draw straight lines connecting the points, as 1, 2, 3, 4 and 5, and draw lines into the centre G. And where these lines meet the arc Y Z connect the points with straight lines, as 6, 7, 8, 9 and 10.

Cut the pattern out as shown by the heavy lines.

Prob. 15 shows a method of developing a rectangular pyramid.

Draw the outline A B C D, fig. 1, and draw the diagonal lines into the centre O. Then lay out the line U V, fig. 2, equal to one of the diagonal lines as O B.

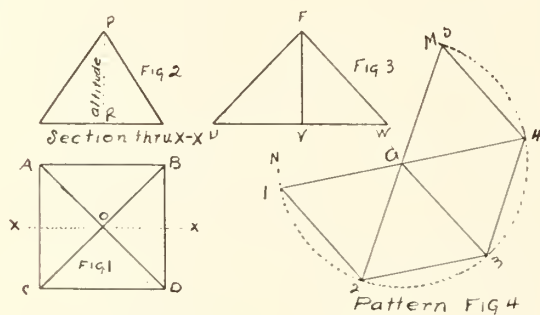
Erect the line U P to the desired height. Then a line drawn from P to V is the required hip line.

Set the point of the compass at P, and the lead at V, and with P or any convenient point as centre, describe the arc and lay off the perimeter. Connect the points and draw lines into the centre.

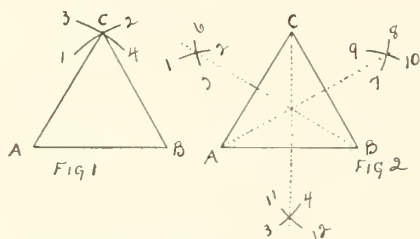
In making patterns for pyramids, it is sometimes policy to make the patterns in two or more pieces, as it is practically impossible to form some of these up in one piece on the brake without mashing the opposite sides.

When seams are necessary, make them in the side of the article and not on the edges.

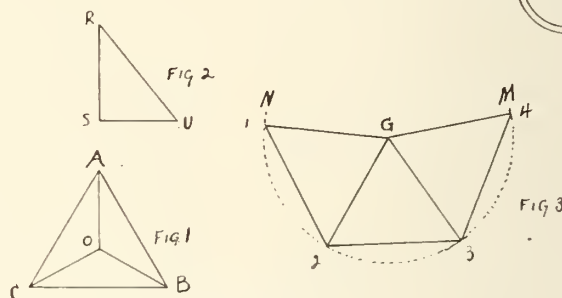
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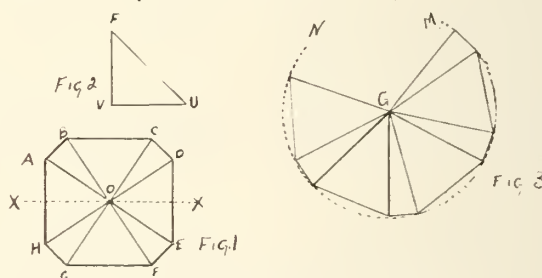
PROBLEM 10



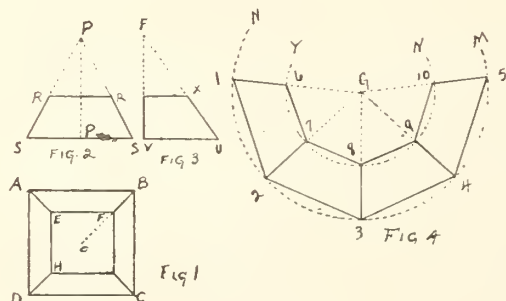
PROBLEM 12



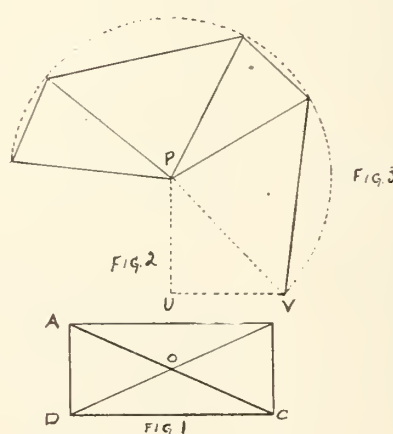
PROBLEM 11



PROBLEM 13



PROBLEM 14



PROBLEM 15

Prob. 16, plate 20, illustrates a proposition in geometry which comes very handy to the sheet metal draftsman.

This problem shows us how to draw an arc or curve through three given points or places, no matter where these points may be.

In Fig. 1, Prob. 16, ABC represents three given points, and we wish to draw an arc which will pass through each one of these.

For convenience we have shown these points equal distance from each other and in line, but the problem would be the same, if, for instance, A was close to B or C, or in any position whatever, for as previously explained the position of the points makes no difference whatever.

What we want to find is the centre for drawing the curve to pass through these three points.

In Fig. 2, ABC represent the three points.

Set the point of the compass at A, and with a radius equal to about  $\frac{3}{4}$

of the distance between A and B, describe the arc 1-2, then with B as centre and the same radius, describe the arc 3-4, cutting 1-2, also describe 5-6, then with C as centre, describe the arc 7-8, cutting 5-6.

Through the intersections of the arcs draw straight lines, as NM, and where they meet, as the point O, will be the centre desired.

It will now be seen that the point O is equal distance from A, B and C. Therefore, if we set the point of the compass at O, and the lead at either A, B or C, and swing an arc, it must necessarily pass through these three points.

Get thoroughly familiar with this problem, as it is used in the next several succeeding examples.

In Prob. 17 we give a practical application of Prob. 16 in developing the lip for a tin measure.

First draw an elevation of the measure, as shown by Fig. 1.

Extend the top line, as shown by the dotted line Rb.

Then drop a line from the point a, as shown by a r; this is to get the height of the point "a" above the top of the can.

Next draw a vertical line as O P, and at any place on this line as "v" draw a circle the size of the can, and divide  $\frac{1}{2}$  of it off into equal spaces.

Set one point of the dividers at "a" and the other point at "r," and with the dividers thus set, transfer this space to the line O P, as shown by V X.

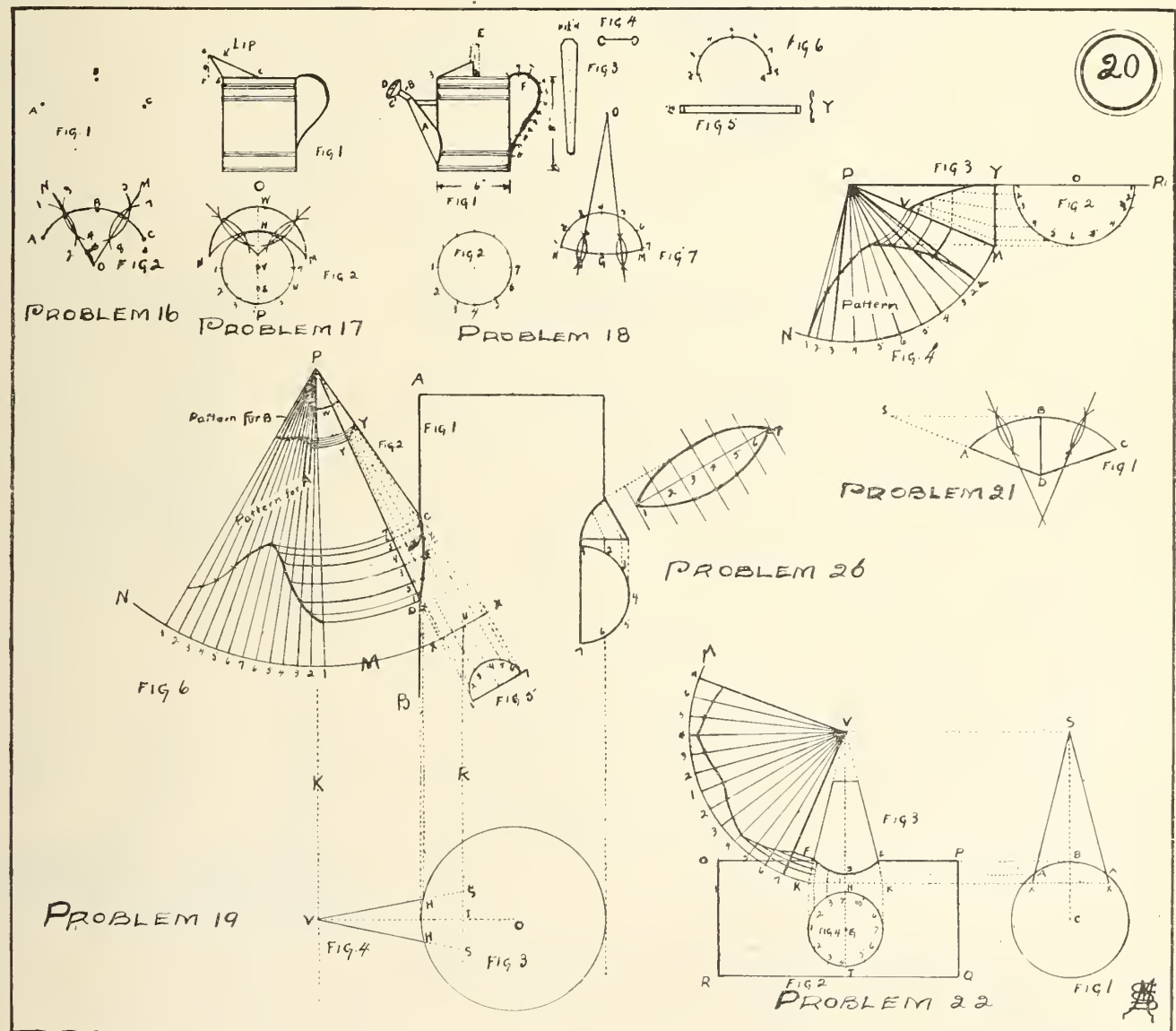
Set the point of the compass at X and the lead at the top of the circle at H, and describe the arc N M.

Lay off on N M the stretchout of one-half of the can.

Then set one point of the dividers at "a" and the other at "b" and transfer this space to the line O P, as shown by W H.

Then N, W, M, are the three points through which it is desired to draw an arc.

Apply the rule set forth for Prob. 16, and the pattern will be developed. Allow for flanges and burr.





# Clauses of Northern Plumbing By-law

Some Regulations in Cobalt Legislation Which are Worth Noting—Inspection of All Work and the Examination of Plumbers is Provided for.

SOME time ago mention was made in Plumber and Steamfitter of the passing of a plumbing by-law in Cobalt, largely through the efforts of J. Murphy, sanitary and heating engineer of that place. A number of the important clauses were given. We herewith reproduce the remainder of the more important clauses.

7. Before proceeding to construct, reconstruct or alter any portion of the drainage, ventilation or water system of any hotel, warehouse, dwelling house or other building, the owner or his agent desiring to construct the same shall file in the office of the Medical Health Officer an application for a permit therefor, and such application shall be accompanied with a specification or abstract thereof in a blank form prescribed and supplied for this purpose, stating the nature of the work to be done, and giving the size, kind and weight of all pipes, traps and fittings.

10. A permit shall be granted or refused within two days from the time of filing the application, and (if granted) shall be valid for six months from the date of issue.

11. If the Medical Health Officer finds that the plan and specification do not conform with this by-law, he shall not issue any permit and it shall be unlawful to proceed with the work referred to in the application.

12. The Medical Health Officer shall appoint such inspectors of plumbing as may be found necessary, when inspectors shall be under the supervision of the said Medical Health Officer.

13. The Medical Health Officer shall be notified when any work is ready for inspection, and all works must be left uncovered and convenient for examination until inspected and approved of. The inspection shall be made within two working days after receipt of notice (notices filed after 12 o'clock noon shall take date from the day following). Where the soil is of such a nature that it cannot be left open for three days, the inspection shall be made forthwith. The Medical Health Officer or the inspector appointed by him may require either a water or a smoke test, which test shall be made by the party whose work is being inspected, except in the case of a smoke test, when the Medical Health Officer or Inspector is supplying the machine or instrument to make such test, and the result of every inspection

shall be recorded in the office of the Medical Health Officer. At such seasons of the year when a water test would not be safe by reason of frost, such test shall not be used. If the work is not found satisfactory after being tested, two days' notice shall be given to complete the same, and if the work is not made satisfactory within that time, the penalty prescribed by this by-law may be enforced forthwith. The smoke test shall in all cases be applied to finished plumbing work, and after the expiration of seven days, if the work is found satisfactory the plumber shall take out the certificate for the same provided for in section 22 hereafter.

14. After a plan or specification has once been approved of, no alteration or deviation from the same shall be allowed except on a written application of the owner or agent of the owner and with the approval of the Medical Health Officer.

23. That no person shall after 30 days from the passage of this by-law, follow, engage in or work at the trade or occupation of plumbing in the Town of New Liskeard until he shall have first procured a license therefor in accordance with the provisions of this by-law.

24. Any person desiring to follow, engage in or work at the trade or occupation of plumbing in the Town of New Liskeard shall first make application to the Board of Examiners hereinafter provided for and shall at such time and place as such board shall designate undergo such examination as to his qualifications and competency as the Board of Examiners may direct.

25. There is hereby created a Board of Examiners of Plumbers, consisting of the Plumbing Inspector for the Town of New Liskeard and two members who shall be practical plumbers (one shall be a master plumber and one a journeyman plumber) appointed by the Board of Health for the Town of New Liskeard, within thirty (30) days after the passage of this by-law, for the term of one year each, unless sooner removed by the Board of Health.

26. One of the members of the Board so appointed shall act as secretary. It shall be the duty of said secretary to preserve and keep all records, papers and books which are required by by-law or by the Board and to do or perform such other work as may be required by the Board.

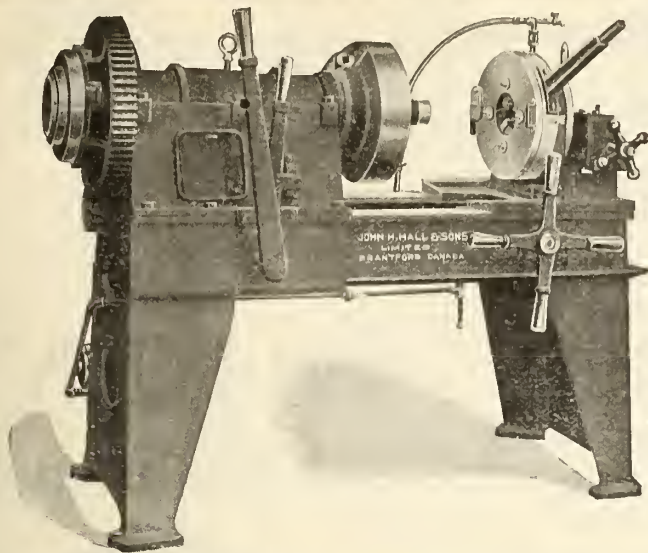
27. Said Board of Examiners shall within thirty (30) days after the appointment of said members meet and organize by the selection of a chairman and secretary, and they shall designate the time and place for the examination of all applicants for license. Said Board shall examine the applicants as to their practical and theoretical knowledge of plumbing, house drainage and ventilation, and also as to their knowledge of the by-laws of the Town regulating such work. Such examination shall be made in whole or in part in writing. If satisfied as to the competency of the applicant the Board shall so certify to the license inspector for the Town of New Liskeard and such inspector shall thereupon issue to such applicant a license in accordance with such certificate authorizing him to follow, engage in or work at the trade or occupation of plumbing, either as a master or employing plumber or as a journeyman plumber in the Town of New Liskeard. The fee for the license of a master or employing plumber who is a resident of the Town of New Liskeard shall be ten dollars for a non-resident master or employing plumber it shall be twenty-five dollars, and for a journeyman plumber it shall be one dollar; said license shall be renewed annually upon the payment of ten dollars for a master or employing plumber and one dollar for a journeyman plumber.

28. In the case of a firm or corporation, the examining and licensing of, and the granting of a certificate as a master or employing plumber to any one member of the firm or the manager of the corporation shall satisfy the requirements of this by-law; but all members of a firm or corporation working as journeymen plumbers will be required to have a journeyman plumber's certificate.

29. Any plumbers failing in the examination before the Examining Board shall have the right to appear before such Board thereafter to take additional examination at the next regular sitting of the Board.

30. The license herein provided for of any master or journeyman plumber may at any time be revoked for incompetency, dereliction of duty or fraudulent use thereof after a full and fair hearing by a majority of the Examining Board, but an appeal may be taken from said Examining Board to the Board of Health whose decision shall be final.





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Belt or motor drive for the plumber, the jobber, or the mill, also Double and Single Head Rapid Nipple Machines.

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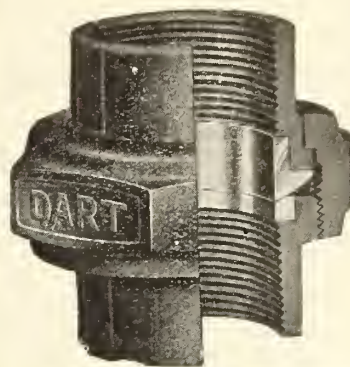
# SAVE TIME

And Make Sure Of Satisfied Customers By Using

## DART UNIONS

The Dart saves time because pipes can be quickly and easily connected, whether pipes are in or out of line.

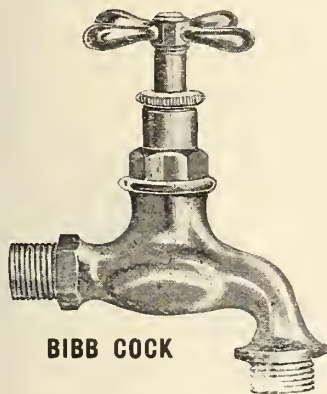
The Dart Satisfies Customers, as the Bronze to Bronze Ball Shaped Joint Cannot Leak, Rust or Corrode. The Dart stays perfectly tight—it will never leak until deliberately loosened. Makes joints time and time again without injuring its efficiency or long life.



If any Dart Union should prove defective we will give you two new ones for it — that's our guarantee.

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DOUBLE BATH  
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# MORRISON'S

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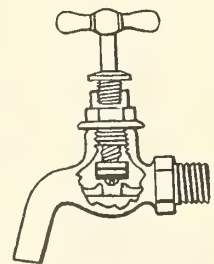
(With Tee Handle or China Index Handle)

These cocks will last for years under ordinary care without the necessity of renewing the washers. This gives them a decided advantage over the ordinary type.

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The plumber who uses these cocks on installations will give the best satisfaction. Our guarantee backs every article.

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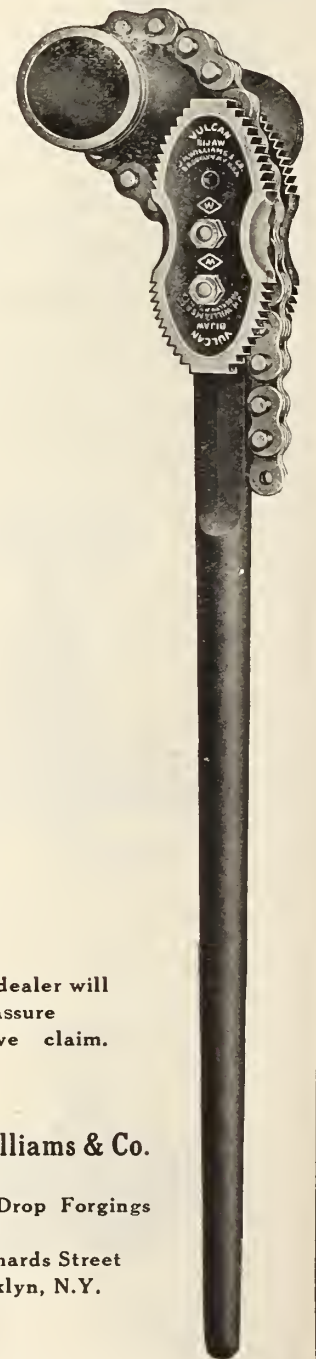
A want ad. in this paper will bring replies from all parts of Canada.

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**The sterling quality back of National Valves pleases the men who sell, install and use them**

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No. 9 Vacuum Valve

## NO. 9 VACUUM VALVE

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*Write for particulars and prices of the complete National line*

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High enough in quality to compete with high price valves on particular work, and low enough in price to meet cheap competition. This is admitted to be the best of the low-priced valves.



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## "MILLER" Hot Water and Steam Radiator Valves

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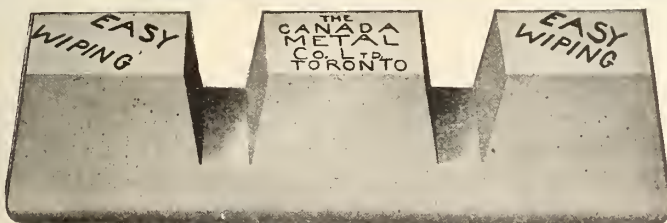


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## EASY WIPING SOLDER

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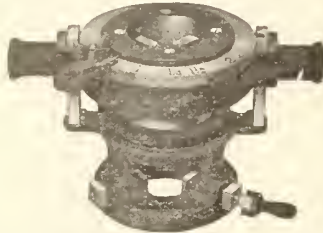
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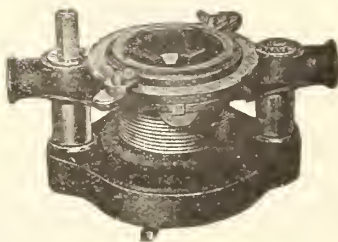




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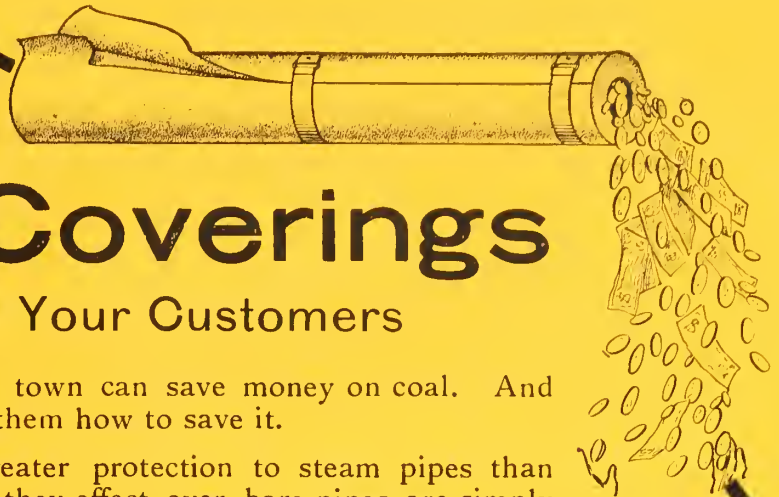
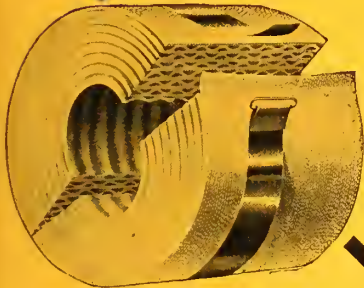
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142

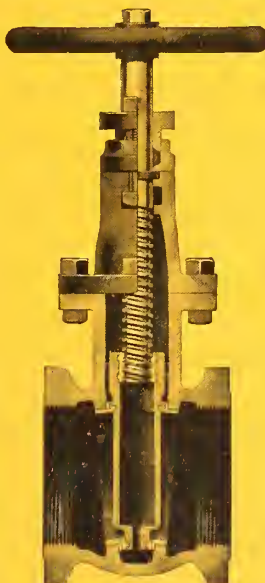


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Vol. VI.

Publication Office : TORONTO, OCTOBER 15, 1912

No. 22

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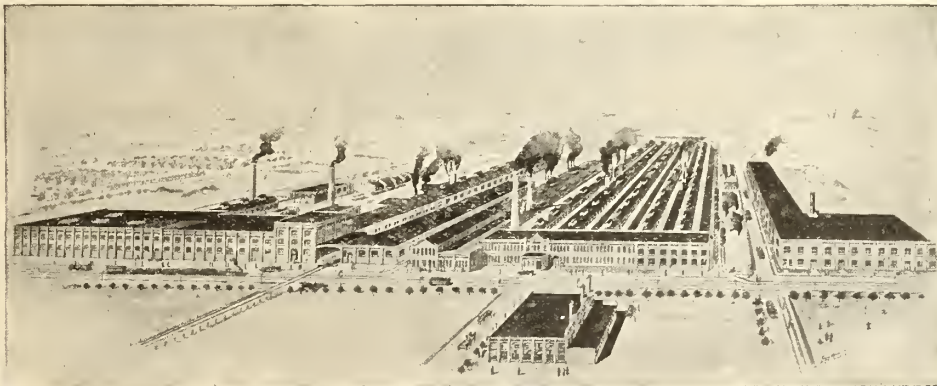
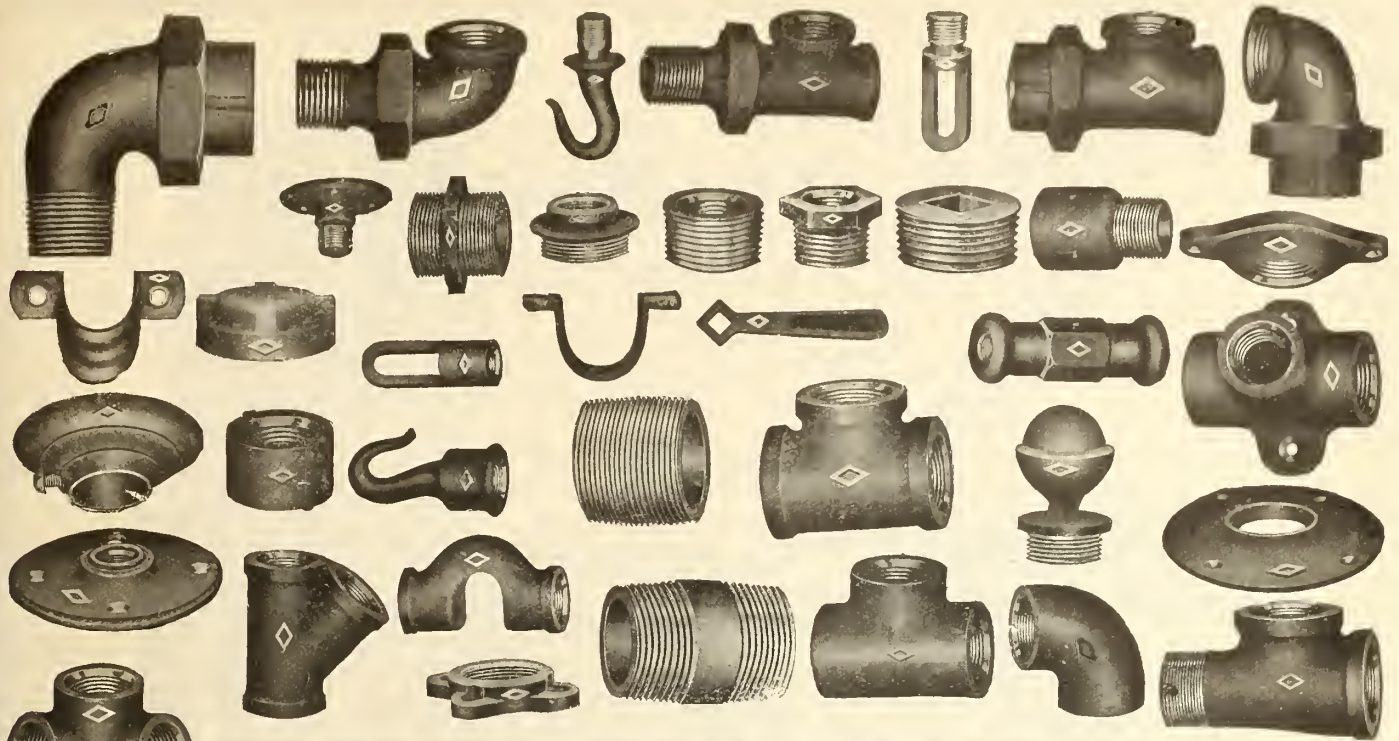
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## A Boiler That Will Increase Your TRADE

Every progressive plumber should investigate the selling qualities of this boiler.

It is the result of over 50 years of careful study of the hot water system of heating. Many exhaustive tests were made before the perfected boiler was placed on the market.

The "Daisy" Boiler is giving the Best of Service in over 50,000 buildings throughout Canada.

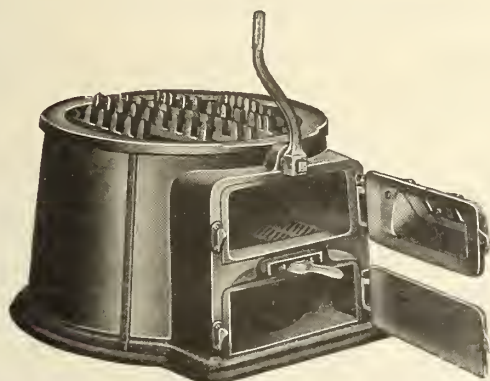
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

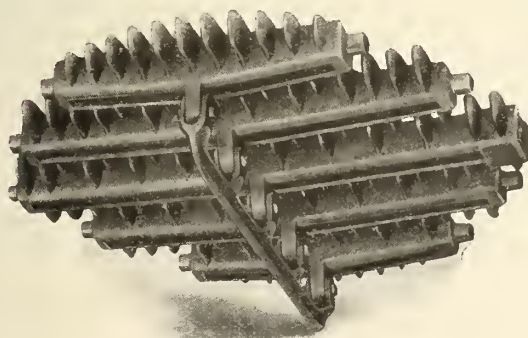
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

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DEEP BASE OF DAISY HOT WATER BOILER,  
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THE GRATE

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Phone Main 4615



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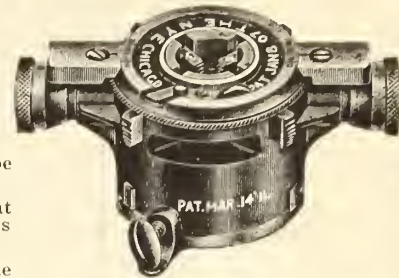
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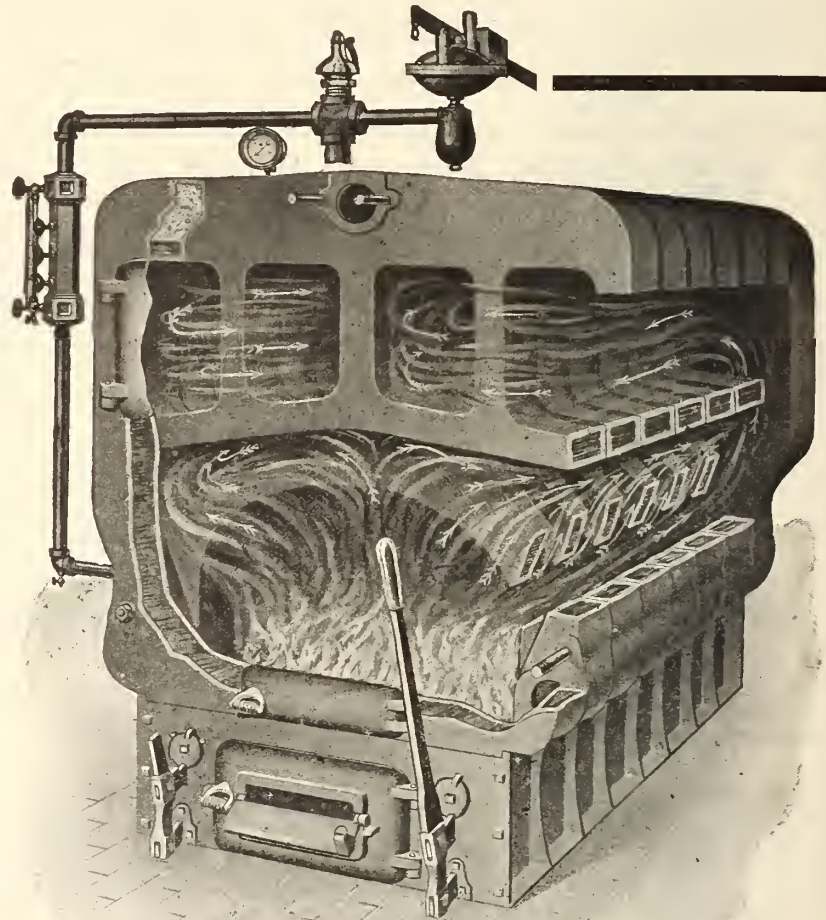
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# The Standardization of Trade Symbols

A Movement Is On Foot to Establish a Code for Universal Use in the Plumbing and Heating Lines—Two Excellent Suggestions for Codes Are Given Here-with.

*STANDARDIZATION is the greatest outstanding need of the trade to-day—standardization of ordinances, material and symbols. There is too much diversity and confusion in the trade. What is proper in one place is taboo in another. When a man moves from one part of the country to another, he generally finds conditions far different from what he has been accustomed to. What is needed is a standard which will apply everywhere, to the man just around the corner and the plumber half way across the continent. Government and municipal regulations should be the same everywhere. There should be a closer adherence to standards in material. Lastly, there should be a standard for plumbing and heating symbols. There is a distinct movement on foot in the direction of standardization and the latest is an agitation for the recognition of a symbol code.*

**I**N this regard, it is interesting to note that the question of standardization of symbols is arousing a great deal of attention from the deepest thinkers in the trade.

We quote a letter received by the Editor of Radiation from a heating engineer on the Pacific Coast, which is very much to the point along this line:—

“Editor, Radiation, I have often thought that it would be an excellent plan if we had a standardized list of symbols used in the heating profession, and now that you have suggested the idea, why not urge it to the heating engineers and contractors throughout? This would not only make the plans easier in designing, but would also eliminate any chances of misinterpreting the plans by the mechanic, during the course of installation.

“Instead of the ‘two line’ steam main which you suggest, why not have one heavy solid line, and for a return, have a heavy broken line. Also for risers instead of having the steam and return risers of indifferent sizes, have the steam riser solid, and the return broken; both being of the same diameter. The temperature control piping could be of the ordinary width in diameter, thus distinguishing it from the steam main.

IRA I. HODES.”

“San Francisco, Cal.

To make the matter clear to all, it will be necessary to quote from the article which had previously appeared in “Radiation” and had inspired this letter:

“A few years ago architects and electrical contractors got together and devised a system of symbols for electrical work to be used on plans. For a long time such a method of noting lights, switches, mains and apparatus had been needed and the adoption of a complete system of electrical symbols has done much to simplify taking off quantities by contractors.

“Many architects have been contemplating a system of symbols for plumbing and steam fitting and many of the larger offices have already adopted their own methods of noting piping, valves, fittings, and fixtures on their plans.

What is now needed is that these symbols be standardized so that they can be used on all plans.

“The system of symbols illustrated is recommended by the Minneapolis Architectural Club as combining all those required in ordinary practice. To the plumber and steam fitter, symbols shown on architects’ plans are very desirable, as it makes estimating much easier than when the specifications contain the only

“I believe, if such a code is to be adopted, it should become universal or national; previous to which it should be thoroughly worked out by the combined effort of those engaged in the architectural, engineering, plumbing and heating trades. After the code is properly arranged it should not be copyrighted in such a manner as to prevent its free use by those engaged in the various lines of business mentioned, but it should be

PLUMBING SYMBOLS		HEATING SYMBOLS	
ADOPTED BY THE MINNEAPOLIS ARCHITECTURAL CLUB FOR ARCHITECTS, CONTRACTORS & BUILDERS			
SYMBOL	DESIGNATION	SYMBOL	DESIGNATION
	IRON SEWER PIPE		STEAM MAIN
	VITRIFIED TILE PIPING		RETURN MAIN
	COLD WATER PIPING		TEMPERATURE CONTROL PIPING
	HOT WATER PIPING		TEMPERATURE CONTROL THERMOSTAT FRESH AIR OPENING
	HOT WATER CIRCULATION		VENT OPENING
	FLOOR DRAIN		VALVE
	SINK		FLANGE UNION
	SLOP SINK		SCREWED FITTING
	SILL COCK		FLANGED FITTING
	COLD WATER		RETURN RISER
	HOT WATER		STEAM RISER
	LAVATORY - BN BASIN		RADIATION ON CEILING
	CHECK & WASTE		WALL RADIATION
	CONDUCTOR PIPE		RADIATOR OR PIPING
	DRINKING WATER FOUNTAIN		HEAT FLUE
	FIRE HOSE REEL		VENT FLUE
	LIVE STEAM CONNECTION		CHECK VALVE
	GAS PIPING		GLOBE VALVE
	CEILING OUTLET FOR GAS LIGHTING SYSTEM		CROSS
	FLOOR OUTLET FOR GAS		GATE VALVE
	BRACKET OUTLET FOR GAS LIGHTING SYSTEM		TEE
	HEATING OUTLET - GAS		COCK
	COMPRESSED AIR PIPING		SQUARE FEET OF RADIATION
	VACUUM CLEANING PIPING		
	SOIL & WASTE RISER		
	VENT RISER		

PIPES SHOWN WITH DOUBLE LINE MAY BE PENCIL-TINTED TO PRINT BETWEEN LINES

A Complete Code Suggested by Radiation.

information concerning the details of the job.”

**Another Suggested List.**

William Bradford, of Quincy, Mass., suggests another list of commonly used symbols, in Metal Worker. He writes:

accessible for free use in publications like text books, catalogues, and the like. This would permit of the information it contained being more widely distributed.

“I have previously given this matter some thought and would be pleased to



have an opportunity to suggest the following. What I have to say is in no way a criticism of any of the articles which have been published.

"I would suggest that the symbol or abbreviation C. O. be added, to indicate a cleanout in the drain pipe. Why not indicate screwed fittings by right angle turns as shown in the accompanying Fig. 1 and long turn fittings by a curved line of some slight radius as shown in Fig. 2.

"I wish to state most emphatically that, personally, I believe two line draw-

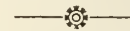
requiring a single line circle to indicate a riser or drop line, would it not be well to indicate the steam risers by horizontal hatched lines within the circle, and crossed lines within the circle of the return riser, as shown in Figs. 5 and 6, respectively?

"The familiar sign used to indicate a register is shown in Fig. 7.

"The dash and dot line shown in Fig. 8 has a pleasing appearance and could be used to indicate lines of gas pipe or vacuum and air pipe lines.

"At the end of this month the visible supply of the world including Standard will be between 13,000 and 13,500 tons as against 16,174 excluding Standard a year ago. Between August and the end of the last year our visible supplies increased about 800 tons. This year the prospects are that they may decrease as much."

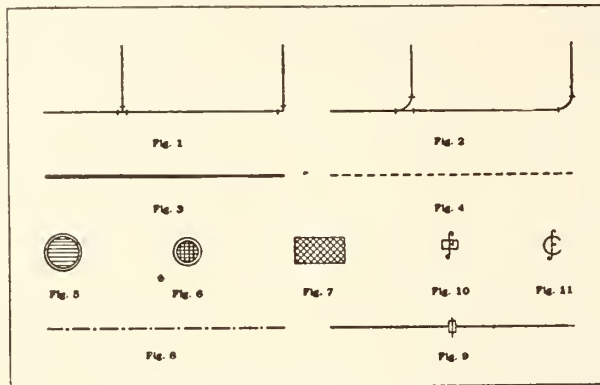
"These considerations have now restored confidence not to any one speculative group, but what is far more important—to the general opinion of tin consumers and tin dealers here. The large dealers here all seem to feel justified in steadily advising their clients that tin is safe and may go much higher, and it is perhaps to be wondered that the rise of yesterday had not taken place before. Even we ourselves with our bullish views had begun to wonder whether tin ever got out of the rut of £200 to £205. But now the ball is started we doubt if it will stop rolling, and we can only conclude this letter by saying that if America is wise she will buy on all weak days, but that she must readjust her idea of what a weak day is for there is every appearance of tin being now established at a higher level, and that only as a stepping stone to possibly £230 and certainly in the opinion of most of us to £220.



#### TO PASS BULK SALES ACT.

At the last meeting of the Association of the Canadian Credit Men in Winnipeg, it was announced that a branch of the Association had been opened in Regina, in Montreal and St. John, N.B., with a secretary-treasurer in charge at each city. It was further announced that the General-manager, Henry Detchson, would attend the next monthly meeting of the B.C. Canadian Credit Men's Association in Vancouver to make final arrangements for the inclusion of that Association in the Canadian body. The British Columbia Association has signified its desire to join the Canadian Association and when this is completed the Canadian Credit Men's Association, Ltd., will operate in every province in the Dominion.

The legislation committee announced at that last meeting also that the "Bulk Sales Act" was to be passed by the provincial legislature in Alberta at its next legislature and the Federal Minister of Justice at Ottawa has definitely promised his attention to the amendment of the criminal code governing false statements.



A Suggestion for a Code of Symbols.

ings for pipe lines should be avoided, as they lead to confusion, require greater skill to make and more time to draft. A person may easily establish a curved line, or even a straight one, but to draw another curved or straight line an equal distance from it is a more difficult matter and requires more skill and time. Would not a heavy solid line for steam and a narrow dotted one for the return as in Figs. 3 and 4, respectively, be more clearly understood than the double lines shown? There are so many pipe lines

"To indicate unions I have always used the form shown in Fig. 9, which has the general appearance of a union. It differs from the one in the original only in having the centre or dividing line extended slightly beyond the horizontal lines.

"Fig. 10 is the common symbol used to indicate square feet (generally square feet of heating surface), which I have modified, as shown in Fig. 11, to indicate cubic feet by simply having the f through an elongated C."

## Some Provisions of New Toronto By-law

Toronto, Ont. — The city plumbing by-laws which have for over a year been under revision by a special committee will come before the City Council at the next meeting for ratification. A warm fight is promised over the provision for the use of iron pipe instead of tile.

Some of the clauses of the proposed new measure are as follows:—

No plumbing work can be done in any house unless a permit is granted by the medical officer of health, and no plumber will be allowed to do any work in a building unless he has satisfied himself that the owner has filed his application for a permit for such work.

#### Pass Examination.

Another clause is as follows: "The medical health officer shall appoint such

inspectors of plumbing as may be found necessary after passing an examination considered proper by him, appointments to be made from applicants who obtain 65 per cent. or more marks at such examination or examinations, while inspectors shall be under the supervision of said medical health officer.



#### THE TIN SITUATION.

An interesting contribution to the discussion on the tin situation is afforded by the Canada Metal Co., who have sent out an opinion received from a correspondent under date of August 31. The conditions there outlined are similar to prevailing conditions and can be read with interest:

# Problems of Heating Water Which Faced The Plumber

Could a Long Connection Between Boiler and Furnace Be Satisfactorily Made? Asbestos Covering Makes This Possible In Many Cases, Plumber Says—The Question of Instantaneous Heaters.

IS it possible to connect a boiler, situated in the kitchen at the back of the house, with a furnace located near the front of the cellar? The question is one which from time to time confronts heating engineers. It was put before a Montreal plumber recently, by a lady who wanted to have a better hot water service than she is now getting.

As a general rule, now-a-days, the boiler is placed in the cellar, near the furnace. In the city, where gas stoves have replaced coal or wood, ranges to some extent, there is very good reason for this. Without a range in the kitchen, the boiler is practically useless.

In the house in question, however, the boiler is in the kitchen. It was probably placed there years ago, when a range was used. But now the range has been relegated to the cellar, where it is used on wash days, and in the kitchen there is only a gas stove. The boiler, therefore, is practically useless.

## Plumber to the Rescue.

It is usually the housewife who notices any inconvenience such as this. It was the housewife in this case. She saw people in other houses getting hot water from their boiler. She could not see why she also might not get this service. She asked her plumber about it—asked him to connect her boiler with the furnace.

The heating engineer inspected the house—inspected the arrangement of boiler and furnace shown here. Then he shook his head. A connection, he stated, would not prove satisfactory. "The boiler is too far removed from the furnace," he declared, "the water would get cold in travelling that distance through pipe located in a chilly cellar. At best you would only secure tepid water."

## Where Asbestos Helps.

Was the plumber right? Several of his fellows say yes—but there are some who shake their heads when asked the question. Of course I do not know the exact lay of the land," said one, "or what temperature would be likely to obtain in the cellar, but I have been able to make some long connections by using some asbestos pipe covering. This will keep the heat in. There will be little wasted as the water passes along the pipe.

"Of course," added the man by way of qualification, "I do not know how long the connecting pipe is, or what would be the temperature of the cellar

through which it would pass—but asbestos covering makes many such things possible"

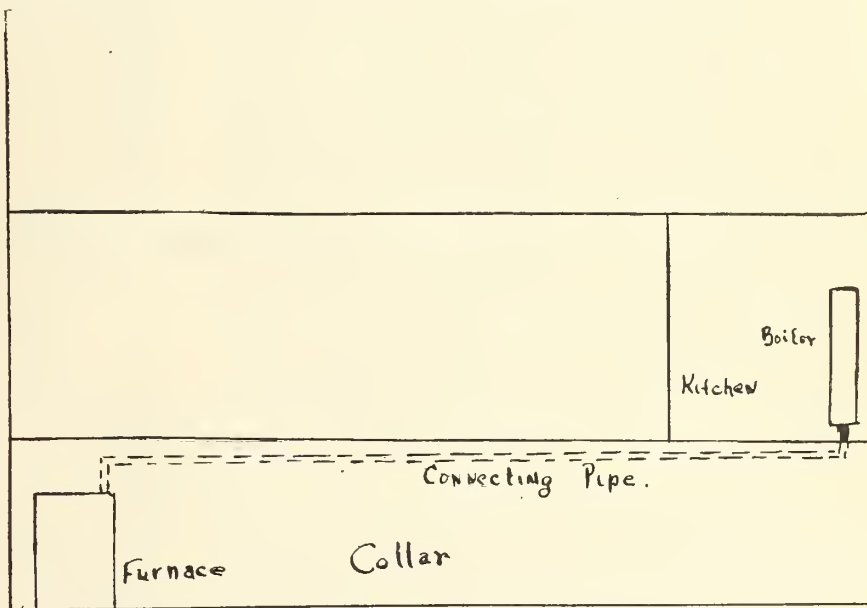
There is more to this particular case, however. Understanding that she could not have her boiler connected with her furnace, the house wife asked the plumber about separate water heating plants. She spoke of several makes. One, of a style which is located in the cellar and gives hot water to many taps—another which merely supplies water to the bath. Strangely the plumber was far from enthusiastic about either of these. Why? That indeed is the question, Perhaps he had more work to do at the time than he could well manage, and was not desirous of getting a job of installing a heater. If this were the case, his action was foolish in the extreme. He gave the inquirer the impression that he did not think much of these rapid heaters—in fact he said in so many words that he had seen a number which had not given satisfaction. Result, the house wife is

per place. Men are realizing that there are good profits in selling plumbing lines as well as in doing contract work and repairs.

In the days when a fume pipe was a necessary attachment with every heater, there was some ground for objection to these products. Many did not like the appearance of a fume pipe in their bath room. But now a fume pipe is not necessary. There is no need to tear a hole in the ceiling. The heater can be put in with little or no disarrangement of the room. There is no doubt that any of the heaters now on the market give splendid service—which is best is a question for each plumber to decide, after careful consideration.

## Opposition Does Much Harm.

A man is doing himself great harm when he tries to throw cold water upon some proper work which a customer wants done. If he is too busy to do this let him say so. Let him ask that the work be postponed for a week or a



Can boiler in kitchen well be connected with furnace in front of cellar—as indicated above? Question which Heating Engineer was confronted with.

not now certain whether she wants one of these instantaneous heaters or not.

## Cut Off His Own Nose.

Surely this man did a bad days work for himself, for there is money in this handling and installation of heaters. That end of the plumbing business indeed, is coming more and more to the front. Salesmanship has been neglected—but it is commencing to get its pro-

month—usually this can be arranged. But even to lose work by inability to give it immediate attention is better than to lose work by speaking against this—unless, of course, there are good reasons for opposition. The words of a Sanitary and Heating Engineer, speaking against some line with which the layman believes him to be thoroughly conversant, does infinite harm.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, OCTOBER 15, 1912

THE NEW plumbing by-law which will be introduced soon in Toronto will contain a clause to the effect that cast iron pipe must be used for drain work within buildings and for three feet beyond the walls.

### CAST IRON VS. TILE PIPE

The clause in question is very moderate and conservative, inasmuch as it allows the use of branch drains of tile. Toronto is one of the last cities on the continent to adopt this measure; and even at that, the proposed restriction does not go to the lengths that other cities, where iron pipe is compulsory for all interior work, have gone. But opposition has developed in Toronto—opposition of the most bitter kind.

It is claimed that the sole force behind the proposed change is the desire of the plumbing craft for larger profits. The Toronto newspapers, ever ready to belittle the plumber, have been publishing articles claiming that the cost of putting in cast iron pipe runs anywhere from 100 to 800 per cent. more than the expense involved in the use of tile. One paper has figured it out that the change would add \$25 to the cost of an average dwelling house. These preposterous claims are advanced to lend substance to the story that it is all a conspiracy on the part of the trade to add a bigger margin of profit on plumbing work.

It has been so clearly demonstrated that the use of iron pipe makes for greater durability and the improvement of sanitary conditions that the objections raised appear hopelessly puerile. So convinced of this have the authorities become in all parts of the world, that the use of iron pipe can be said to be almost universal. Yet when Toronto shows an inclination to keep up with the march of progress, it is put down as a "plumbing conspiracy!"

It should not be a difficult matter to show the civic authorities of the Queen City that the proposed change means a great public benefit. Evidence can be obtained from scores of cities on that head. It is to be hoped that the evidence is secured at once to clear the Toronto trade of this baseless calumny.

Everything is on the increase in the United States—even, according to R. G. Dun, the number of failures. More are venturing, and it is only the law of averages that more should miss the mark.

\* \* \*

Pretty nearly time to start the time-honored but seemingly futile task of formulating New Year's resolutions. The experiences of the past year will suggest many resolutions which should be carried out.

AT SOCIAL reform meetings, now being held in Montreal, Mr. Ihlder somewhat startled his hearers by declaring that the old idea "an Englishman's home is his castle," is now obsolete. Community liberty, he thought, did not stop where the individual's house began.

### HIS HOUSE NOT HIS CASTLE

He urged that inspection of houses is necessary, if proper sanitary conditions are to be secured, and he held that this inspection should be general. Not only should the houses of the poor be visited, but those of the well-to-do and the rich, too.

A good deal of sound common sense lies in those remarks. Man does not live to himself alone in this age. The community at large is affected by the condition in which each house is kept. It therefore behooves the community to see that each house is kept properly.

A proper inspection of houses, factories and public buildings, is of course what is wanted by sanitary and heating engineers. This would do away with much of the bad work by which they are misjudged. Also it would slowly drive incompetents out of the business. There would be less careless work—more tendency, in fact, for a builder to think who would do the work well, rather than cheap.



### CANADA'S GROWING TRADE.

CANADA has every reason to feel proud of the great increase in revenue during the past six months. The financial statement made public recently shows a total revenue of \$81,378,650, an increase of \$17,309,126, as compared with the corresponding period of last year. The increase averages nearly three millions per month and is the largest on record for any half-year in the history of the Dominion. The growth of imports, with consequent increase in Customs revenue, accounts for the greater part of the total gain. For the six months the Customs receipts totaled \$56,455,146, a gain of \$14,170,611 over last year. Excise revenue totaled \$10,152,014, a gain of about one-and-one-third millions. Post office revenue increased by \$600,000.

With the growing revenue, there have also been, of course, growing expenditures. The expenditures on consolidated fund accounts for the six months totaled \$43,931,539, an increase of about eight millions, or about twenty-three per cent. over the first half of the last fiscal year. Capital expenditure, the figures of which are necessarily incomplete, shows a total of \$11,761,983, which is practically the same as for the corresponding period of last year.

The net debt of the Dominion at the end of September was \$313,508,376, a decrease of \$3,016,796, during the month and a decrease of over ten millions as compared to the debt on September 30 last year.

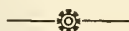
# Topics of the Trade:

## Comment on Plumbing Problems

**D**OES it pay to take a man off contract work to attend to jobbing work? Answering off hand, one would probably say, no.

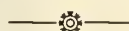
There is this to be considered. A rush order comes in and the "boss" finds that, in order to fill it, he will have to send a man who is working on one of his contracts. He sends someone up, or goes himself, to instruct the journeyman. Item No. 1—time of person who takes message. The journeyman will have his tools unpacked on the job. He may perhaps be engaged in melting up solder or some such job. He has to pack his kit up again and leave what he is working at. When he returns, he has to unpack his tools and it may take him the better part of half an hour to get ready for work again. Who is going to pay for this lost time?

A system adopted by some men is to fix a minimum charge of \$1 for all jobbing work. If it is only across the street and the time consumed is only ten minutes, the dollar charge goes just the same. This is a reasonable ground to assume. The sanitary engineer has to keep a man on hand constantly to answer hurry calls. Part of the time, the man has nothing to do. The charge on work done must cover the periods of enforced idleness. Customers must pay for the opportunity for immediate service that the sanitary engineer provides.



**B**Y the way, if a man signs up to do a job at a certain figure and then, through scarcity of material or lack of help or some unavoidable cause, he cannot go ahead with the work, can he be forced to do so? This is the question propounded by a subscriber.

It is, of course, self-evident that, if the man who has been awarded the contract cannot get material and help, he cannot be forced to do the work. That is a physical impossibility. But the owner may have legal resource—but that is a point for the legal lights to determine. Perhaps some reader has had an experience of this kind. Let's hear about it.



**T**HE plumber does not assert himself enough. On some occasions, he does. If he happens to wander out into the shop and find all his men putting their whole time to a discussion of baseball averages, he can generally be depended upon to assert himself emphatically and unmistakably. But in matters outside he does not make himself felt. He does not insist on the enactment of legislation which would benefit trade and public equally. He does not call attention to unsanitary conditions in public buildings. He may see lots of conditions which require a quick remedy but he doesn't move. By calling attention to such things, he may stir up discussion and, perhaps, cause trouble. He prefers to stick to the passive role.

This is a great mistake. Conditions exist in all cities which should be remedied, but the general public is too busy and too uninformed to take notice. The plumber sees and appreciates what is needed. He should speak out demanding the remedy.

Some months ago, Plumber and Steamfitter printed a number of articles, pointing out the fact that in many of the Toronto restaurants and ice cream parlors, the arrangements for carrying away waste were extremely unsani-

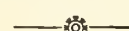
tary, not to say crude and primitive. Hotels are compelled to carry away waste and refuse from the bars by iron pipe, but the ice cream man often "gets by" with a galvanized pipe or tin contrivance. Since the publication of these articles, there has been a noteworthy improvement in the sanitary condition of these places.

However, there is still room for improvement, in this respect, not only in Toronto, but in all large cities. It clearly devolves upon the sanitary trade to investigate and to insist on the betterment of conditions.



**F**IGURING on estimates for contract work cannot be done too thoroughly. Even the best of us will make skips sometimes. The other day a certain sanitary engineer who, by the way, is a stickler for accurate figuring, had an experience which has convinced him more than ever of the necessity of going over his figures with great care and accuracy. He figured on a job and it was intimated to him some time after that his bid had been the lowest. However, the architect did not rush matters, and some weeks passed by. In the meantime some advances were made in the cost of material and help became very scarce. The sanitary engineer was pretty well rushed, and, when he was finally notified that the contract was his, he did not show any eagerness to sign up. The architect 'phoned him several times and showed such anxiety to get the matter settled that our friend, the worthy S. E., began to suspect there was an Ethiopian in the kindling supply. "I wonder if I forgot anything in figuring that job?" he mused. Finally he went over the figures and found there was nothing he had left out except traveling expenses and his percentage of profit. A mere trifle of \$65!

It all goes to show that you can't be too careful. You have to keep both eyes open and employ your grey matter all the time in figuring on jobs. Just get over-confident and a little careless and, before you know it, you are forgetting to figure in soil pipe or the baths, or some such mere detail.



The shipping congestion in the West is living up to advance notices.

\* \* \*

Trust, and dead beats deal with you; ask cash, and they leave you alone.

\* \* \*

Arm-chair theorists have found many ways of reducing the high cost of living. There is only one certain way. Get back to the simple tastes of the last generation, forget the luxuries that you have come to regard as necessities, don't go to the theatre and the ball game so often. But, after all, who wants to cut down the cost of living at that price?

\* \* \*

Look after the little things and the big things will look after themselves. So runs the old, and therefore, truthful adage. The dealer who concentrates on coppers, nails down nickels and diverts dimes will find that the dollars will come of themselves. Still there is such a thing as becoming narrow if the big profit is sought only through the medium of small profits.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## WANTS DAMPER AIR.

Editor Plumber and Steamfitter.—I notice that the air in some of the houses where steam has been put in seems very dry and that it sort of draws the woodwork. The walls are smoked up. Can you tell me a good way to fix matters so as to get rid of these troubles?

G. P. B.

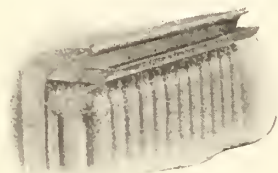


Fig 1.

In Figure 1 we show a combined radiator shield and pan for holding water. The shield will throw the air coming up the radiator away from the walls and the water in the pan (which is here shown withdrawn) will moisten the air sufficiently to prevent the woodwork from drying up.—D. C. H.

## FLUSHING VALVES.

Editor Plumber and Steamfitter. — Will you tell me something about what are called flushing valves? Can they be used on all kinds of house fixtures?

L. J.

Flushing valves are made of metal and are so constructed that they are said to require no regulation whatever. They can be set to discharge a certain amount of water each time they are operated, and can be applied to closets, urinals and slop sinks.—D. C. H.

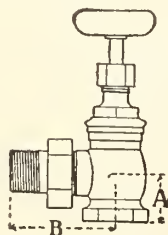


Fig. 2.

## PROPER VALVE MEASURES.

Editor Plumber and Steamfitter. — Sometimes I find that the men do not seem to get in the work right when

they are "stubbing up." Now will you please show just the measures that they should allow for on a valve?

M. S.

Figure 2 shows the measures to be taken. The letter "A" will give you the height that should be allowed for when the stub is cut. In case that it is a one pipe job unless the radiator is centred on some window, the measure "B" can be disregarded. In all two pipe jobs, however, measure "B" will have to be taken into consideration.—D. C. H.

## ICE BOX WASTE STOPS UP.

Editor Plumber and Steamfitter. — Several ice boxes of some of my customers are continually stopping up from the impure matter that seems to be in the ice. What can I do to prevent such matters?

Z. X.

We don't see how you can do anything after you have once cleaned out the box. If it soon stops up again, it is the fault of the party who owns the box. The owner should take care of the box more frequently. If it is washed out well each week and a quantity of hot water allowed to run down the drain pipe we believe that the box will hardly ever stop up. The hot water will dissolve the slimy matter that accumulates. We have tried this out on our own refrigerator and found that it works well and, to date, have yet to find a better method.—D. C. H.

## HOW MUCH PRESSURE ON THE GAUGE?

Editor Plumber and Steamfitter. — The other day a party told me that the steam pressure on the steam gauge was not the whole pressure. Will you explain to me how that could be?

A. N. G.

The pressure that is on the gauge is the steam pressure plus the pressure of the atmosphere. This pressure of the atmosphere varies according to the altitude of the place where you may be living. In case one lives near the sea level this atmospheric pressure would be about 14.7 pounds. To this 14.7 pounds add whatever the pressure on the gauge may be and you will then have

the total amount of pressure that there is on the gauge.—D. C. H.

## WANTS IDEA FOR STORAGE TANK.

Editor Plumber and Steamfitter. — Will you give me some idea as to how a storage tank may be heated by steam to good advantage?

J. G. H.

We can hardly do better than to answer by showing a cut of one, which we do in Figure 3. This explains the matter more briefly than if we went into an extended description. Examine

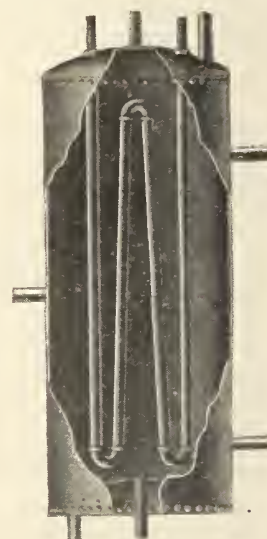


Fig. 3.

the cut carefully and you will at once see just how it can be done.—D. C. H.

## WATER COCKS FOR PUBLIC BUILDINGS.

Editor Plumber and Steamfitter. — I have a rather good sized hotel to put the plumbing in. Now would you advise the self-closing or the hand-closing type of water cocks?

D. C. R.

We believe that it would be for the interest of the owner to have you put in the self-closing type in this case, as it would not be necessary for someone to be constantly on the watch to see that the faucets were all closed. Such faucets would undoubtedly save a loss of much water in the course of a year's time, besides doing away with the chance



of an overflow in certain types of fixtures that can do so when stopped up.—D. C. H.

#### LOCAL VENTING.

Editor Plumber and Steamfitter.—Is local venting absolutely necessary for an ordinary bathroom in an ordinary house?

S. K.

You have asked a question upon which many have agreed to disagree. We might say that it is desirable, although in many cases not absolutely necessary. In large public buildings, the main toilet room of a large hotel or factory, we should say would be better for being vented locally.—D. C. H.

#### THE DIFFERENCE.

Editor Plumber and Steamfitter. — Will you tell me the difference between a fuller and a compression faucet?

66.

A compression faucet is one that stops the flow of the water by forcing down a washer to the seat of the faucet. This is done by turning the handle until the result is accomplished. A fuller faucet is one which is so made that a rubber ball is drawn to the seat of the faucet to stop the flow of the water. Compression faucets are best used on heavy pressures and fuller on lighter water pressures.—D. C. H.

#### NEEDS A TEMPERATURE REGULATOR.

Editor Plumber and Steamfitter. — I put in the heat in a three-storey flat and now I am in a peek of trouble. The tenant in the first flat is a crank on the fresh air question, and never wants the rooms over 65. The second-storey parties are rather old and want their rooms at about 80, while the third-storey tenants are normal and like to have the rooms at 70. Do the best we can we never can get them all to feeling just right. Now, Mr. Editor, if you can give us a tip as to how to solve this matter, you will be making a whole lot of people happy immediately.

J. Storms.

You can do it easily, and also relieve the feelings of the janitor and, at the same time, reduce the coal bills. Send to your jobber and get his figures on two or three different kinds of temperature regulators and install the one that seems best to meet the needs of the job. It won't cost so very much and it WILL solve this difficulty from the very start. D. C. H.

#### PERMANENT EXPANSION.

Editor Plumber and Steamfitter. — Will you tell me if when the fittings and pipe on a steam job expand, they ever stay expanded to any degree?

T. T.

We cannot say with regard as to low pressure. We have heard that in some instances where the fittings were removed from high pressure plants that the fittings were found to have become larger from the expansion.—D. C. H.

#### INFORMATION RE NON-FREEZING CLOSET.

Editor Plumber and Steamfitter.—Can you tell me how to set a closet so that in a very cold place it will not freeze?

M. C. R.

Perhaps we could, but at that you would be taking a chance that is not necessary, for there are plenty of non-freezing closets to be obtained, one type of which we show in Figure 4. We believe that you will do better to obtain a closet of this style from your regular jobber, than to fuss around trying to

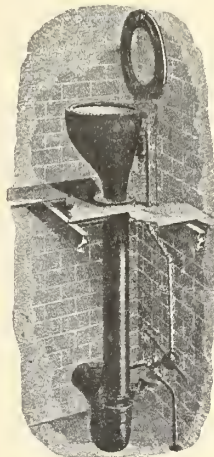


Fig. 4.

make a closet that was never intended to be placed in such a place stand the exposure.—D. C. H.

#### MORE TROUBLE FROM THE WATER-FRONT.

Editor Plumber and Steamfitter. — I have a plumbing job that pounds. The pipes and water back are clean, the water back sits level, there are no traps anywhere that I can find and yet there is the hammering when the job is working. Please suggest a remedy.

F. L. Dawson.

Disconnect and examine the water back again. Unless we are mistaken, we believe that you will find that there is a small space above the tapping for the flow. Such a place will collect air and that is the cause of your trouble. If that is found true, put in a kind of water back that does not pocket air.—D. C. H.

#### BEST COVERING FOR PIPES.

Editor Plumber and Steamfitter. — I have an outbuilding 12 ft. x 20 ft. to heat from the steam boiler in the basement of the main building. The out-

building is about 20 feet away. What is the best covering for the pipes, as we sometimes get it as cold as 20 deg. below zero? I find the crown of the boiler is about 18 in. below ground level. We thought of making a box and filling with sawdust. Shall be glad of your opinion through the medium of your paper.

W. T.

Use regular commercial pipe covering of the air cell variety. Instead of boxing and filling with sawdust, it will be less trouble and far better to enclose the covered pipe in tile, being careful to cement the joints thoroughly. The pipe can be run in the tile and ditch and the ends connected up afterwards.—D. C. H.

#### SCARCITY OF RADIATORS IS EXPERIENCED.

Though many heating engineers are in a hurry to finish their new work, that they may devote their attention to repairs, they are being held back in almost innumerable ways. The latest handicap is the scarcity of radiators. There was such a scarcity last year, but this season the situation is even more serious.

Though radiators are scarce it is not true that the supply is exhausted, nor that the manufacturers are unable to give fairly prompt shipment. The root of the trouble is that the demand has all been for one or two lines. While there are radiators to be had, these are not of the style which architects have specified.

Last year there was noted a demand for small radiators. This demand has grown tremendously and though manufacturers prepared for a heavy rush this has passed their expectations.

The call is for two coil radiators, and for low radiators. Many of these are wanted to go under windows, but even in rooms where the radiators are not so placed the demand is for ones which stand low.

Fashion is a peculiar thing. How it starts is never quite certain. But it is sure that a fashion makes a run on some certain line. It makes that line scarce—so that many are delayed with work. Of course, here, as in many other places, the men who order early experience little or no inconvenience.

#### OPEN WESTERN OFFICE.

For the convenience of middle western customers, J. H. Williams & Co., makers of W drop-forgings, Brooklyn, N.Y., have opened an office and warehouse at 40 South Clinton street, Chicago, Ill., where a stock of their drop-forged specialties will be carried on hand.



# Plumbing System In New Collegiate

Specifications Followed in Installing the Plumbing in the Handsome Big High School at Brantford, Ont.—This Installation is Acknowledged to Have Been a Most Complete One.

**T**HE new collegiate building at Brantford, Ontario, recently completed, is acknowledged to be one of the best equipped schools in this country. It will be interesting, therefore, to give the specifications followed in carrying out the plumbing contract. Howie and Feely, Brantford, had the plumbing and heating contracts. The architects were Chapman & McGiffin, Toronto.

**Cast Iron Drainage:**—All drainage inside the building connected with the city sewer from a point three feet outside the foundation walls shall be of extra heavy cast iron, having the inside diameters of the sizes shown on drawings. Drains and horizontal waste pipes shall have a fall of at least  $\frac{1}{4}$  inch per foot.

**Joints in C. I. Pipe:**—Joints shall be made with picked oakum and tightly caulked with pure soft lead.

**Joints in W. I. Pipe:**—Joints in wrought iron pipe shall be made with wrought iron screw couplings, smooth inside, and put together with red lead.

**Hangers:**—Standing runs of cast iron pipe shall be firmly held in place by means of iron pipes, hooks or rings placed immediately below the hubs and securely fastened to the adjoining wall or partition.

Where these hooks or rings bear upon the walls or partitions, they shall rest upon heavy rubber bearings to prevent vibration. Horizontal runs shall be firmly secured to joists by means of strong iron hangers placed not more than 5 feet apart.

**Drains:**—Form a dry drain around the cellar walls, as shown on Basement plan, of 2 inch sole tile with loose joints. Care must be taken that this drain shall continue unbroken around all areaways, corners, angles, etc. Cover with paper before filling in with broken bricks and stone chips. Connect to a 4 inch vitrified tile drain from the cooling tank in boiler room to the slope of the hill at the rear of the lot, draining ventilation duct in two places; protect the mouth of these openings with gratings.

**Earthenware Pipe:**—All earthenware pipes are to be smooth, salt glazed and cylindrical free from defects, each length perfectly straight. The ends of the pipes are to be wet before applying the cement and the space between each hub and the small end of the next section is to be completely filled with Portland cement with joints clean inside. Beds must be solid and cut out for hubs. Pipes to be laid with even and gradual fall, using spirit level. Use Y branches for all connections. All drains to be left uncovered until inspected and approved by the architects.

**Standing Soils and Wastes:**—Provide and set extra heavy cast iron standing pipes for soils and wastes, of the sizes marked on drawings and as hereafter specified.

Connect each line at the foot to the house drain and continue each line independently 5 ft. 0 inches above the roof, leaving the upper ends open.

All waste and soil connections into these lines shall be made with Y-branches and bends.

Where these pipes intersect the roof, they shall pass through heavy copper sleeves flashed into the roofing and cap flashed with copper flanged hoods caulked into the joints of the piping.

**Back Vent Pipes:**—The traps of all fixtures shall be back vented through medium weight cast iron vent pipe of the same size as the waste or soil pipe provided for such fixtures.

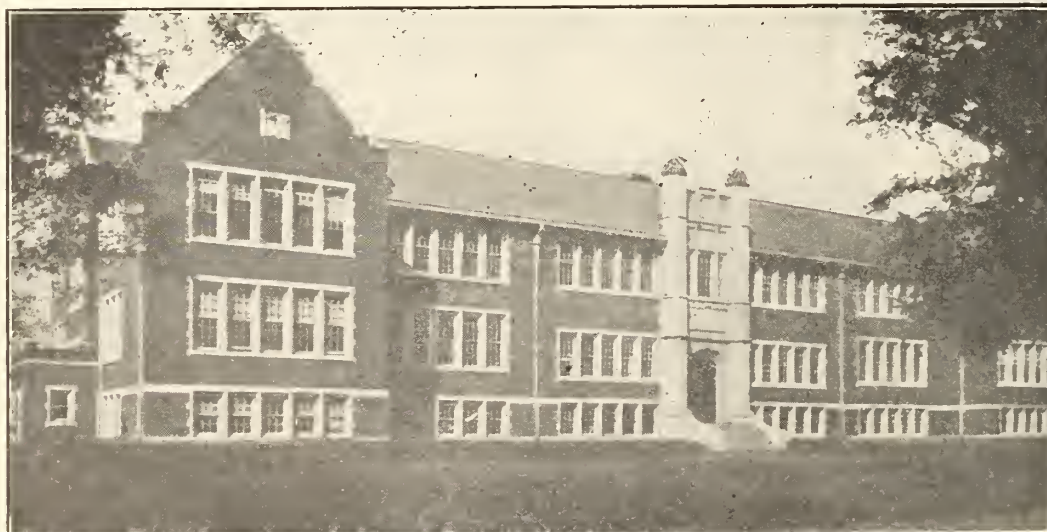
These vent pipes shall be connected into the standing soil pipes at least 6 ft. 0 in. above the entrance of the highest fixture. All vent connections shall be made with T-branches.

**Main Water Supply:**—Make connection with the city water main in the street, and pay all charges for such connection (also all costs of taking up and repairing of pavements).

Bring water into the building through a 4 in. galvanized wrought iron service pipe. At a point on the front wall of the boiler room supply same with stop valve and waste. Branch from the boiler room with two lines of stand pipe continued to the top storey independently at each end of the main corridor where shown on plans. Branch from the above service pipe, and continue the piping to all fixtures throughout the building also to boilers, tank and all outlets marked on plans for future connection to fixtures and furniture.

All water piping shall be of galvanized wrought iron.

**Arrangement of Lines:**—Piping must be graduated and arranged so that the using of water in any fixture will not



The new Collegiate Building at Brantford, Ontario, which was fitted in complete manner.



interfere with the supply to other fixtures.

All supply pipes shall have air chambers concealed in the rough work.

There will be no hot water lines in the building.

**Testing:**—After the piping is all in place and before any fixtures are set, the contractor shall enclose all openings and shall at his own expense, test the work by filling the system with water, in the presence of and to the satisfaction of the architects.

**Flush Tank:**—Furnish and set up in roof space, where shown a 4 ft. 0 in. x 1 ft. 6 in. tank (inside measurement). The tank to be made of 2 in. dressed pine, securely fastened together with  $\frac{3}{8}$  in. bolts and 2 in. x 4 in. stays. Three stays to be placed at each end of tank and two across tank at centre. The tank is to be lined throughout with 5 lb. sheet lead. All joints to be lockseamed and properly soldered. The lining to be securely fastened to tank to prevent sagging. Provide tank with strong hinged top.

**Drip Pan:**—Under tank in attic provide a 24 gauge galv. iron drip pan. The pan to project about 6 in. beyond tank and to be 6 in. deep. Connect waste from pan into overflow from tank.

**Tank Supply:**—The water supply pipe to tank shall be 2 in. galvanized iron pipe, same to be connected to the 4 in. water main where it enters the building. The supply pipe shall be fitted with a 2 in. brass gate valve near the 4 in. main also with a 2 in. brass gate valve at flush tank. Place on supply in tank two 1 in. heavy brass body tank valves complete with copper floats. Floats to be of sufficient size to control flow of water.

**Overflow and Waste for Tank:**—Provide a 1½ in. galv. iron overflow pipe, to be run from flush tank to cooling tank in boiler room. Connect a ½ in. galv. iron waste pipe from bottom of tank to overflow pipe. Waste pipe to have a 1½ in. brass gate valve, placed near tank.

**Flushometer Supply:**—From supply tank run two galv. iron mains of sufficient size to flush all closets, with a separate branch to each closet. The two feed or supply pipes to be fitted with brass gate valves, at supply tank. Also place a 1¼ in. brass gate valve on the supply for each closet.

**Fixtures:**—All of the different fixtures will be located as shown on the drawings and will have cold water, sewer and vent connections as herein specified.

**Nickel Plating:**—All exposed plumbing work throughout (except feed pipes to closet valves) is to be nickel-plated.

**Painted Pipes:**—All exposed pipes other than nickel-plated shall be painted with aluminum paint.

**Lavatories:**—Supply and install complete, the following lavatories where shown on plans:—

- Two groups of 3 each room No. 12.
- Two groups of 4 each room No. 5.
- One group of 5 each room No. 211, 204.
- Two single lavatories in rooms No. 112 and 108.

## GAS FITTING.

**General Requirements:**—Furnish and put in gas piping with outlets as shown on drawings. In general, the location of outlets is correctly indicated, but this contractor shall make such changes as may be required to centre the outlets with respect to special finish, panels,

All branch outlets to be taken from the top or side of supply pipes, and all piping shall be laid with a fall toward the metre.

The sizes of pipe shall be graduated, arranged and put up in accordance with the rules of the local gas company.

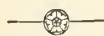
**Material and Workmanship:**—All piping shall be of wrought iron, with fittings of galvanized iron, put together with red lead, and securely fixed in place with iron hooks and bands.

All nipples shall project sufficiently to permit the fixtures to be properly secured thereto.

All drops shall be perfectly plumb.

**Testing:**—Before the plastering is done, all gas outlets are to be capped and the pipes tested under an air pressure of eight pounds. The system shall maintain this pressure for a period of two hours without the use of a pump.

At completion of the test the caps shall be left on for future connections.



## Old Firm Changes Hands.

Edmonton, Alta.—The tinshop, plumbing and heating business of Ross Bros., has been bought out by Jas. Reed and Jas. Forsyth. Jas. Ross retains his interest and the business will be continued under the first name of Ross Bros. Both Mr. Reed and Mr. Forsyth have been employes of Ross Bros. for many years.

## Opening Banquet.

Winnipeg, Man.—The Canadian Credit Men's Association opened their winter session by a banquet at the Royal Alexandra Hotel, on October 10. J. Bruce Walker, commissioner of emigration, delivered a lecture on "Empire Build-

ing." A record number attended the banquet.

## New Plumbing Firm.

Wallaceburg, Ont.—Arthur Montague has opened a plumbing and gasfitting shop in this town.

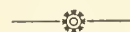
## Contracts Awarded.

Toronto, Ont. — The North Toronto High School Board met last evening and awarded contracts for the new High School building. B. Palmer, of North Toronto, got the mason contract at \$19,148, and R. Sherwin, Toronto, the carpenter contract at \$9,900. Other awards were: Heating, Waterman & Co., Toronto, \$2,776; wiring, Douglas, Allen Co., North Toronto, \$369; hardware, Canada Hardware Co., \$795.

## Want the Cash.

Winnipeg, Man.—Payment in cash instead of by cheque in accordance with Rule No. 8 of local union No. 254 of the plumbers is a reform in the existing situation between masters and men that the plumbers are resolved to bring about. Heretofore, the custom of employers has been to pay by cheque on Saturday, at noon, with the result that since the banks are closed when the men are not at work, the cheques must be cashed in stores and saloons with consequent temptation in the latter case to squander a week's wages. The leaders of the union deprecate this and they have the unanimous support of their men in demanding that payment be by cash. If the shopowners are willing to concede the cash payment, the plumbers will forego the weekly payment for fortnightly, as it has been represented to them that paying in cash every week is an awkward system for employers of a large number of workmen. No opposition to the rendering uniform of the wage scale is expected, as the union only demand that fully qualified plumbers be paid the union rate of 55 cents per hour.

The employers' side of the question was discussed last night in the Builders' Exchange, and an agreement with the union will probably be arrived at today.



## YOUNG JOURNEYMAN SHOT.

A youth who "didn't know it was loaded," nearly took the life of Israel Lang, a young journeyman plumber, in Montreal last week. Lewis was walking out of his back yard, when a friend jumped from behind a door. "Throw up your hands," he cried in a jest. Then, in jest, he pulled the trigger. But it was no joke for young Lewis who now lies between life and death at Notre Dame Hospital.



# The Reason for Tins Upward Leap

LET the dealers who lament advances struck from time to time in the ware they buy, cast their eye over, the accompanying chart, which shows the fluctuations of tin on the Primary market. This will give them cause for thanksgiving that the price of tinware has not advanced with the price of tin. In 1850—just a little more than sixty years ago—tin was selling at an average price of £77. To-day it is quoted in London at £226 10s, and still the tendency is upwards. The rise in price has been remarkable, yet it is not very hard to understand why this result has come.

Figures which are on record make it very plain that production has fallen off—not ton for ton perhaps, but the extra production has not nearly equalled the extra consumption. The result therefore, has been a decrease in the reserve—a decrease which during the last few months has become alarming.

## Comparing Reserve and Demand.

Take the situation at the present time, forgetting the old low level of £52 10s, which was reached in 1878. What can be more remarkable than the advance in price since 1909. An average of £192 in

1911, and a price to-day, which, considered with the prices of the past few months, show that the average this year will be even higher.

There is much talk of syndicate, when tin is considered. And rightly so. But the syndicate is a thing indefinite. Little is known of the personnel of this syndicate, and it is far from certain what steps it will take next. The reserve supply, however, and the demand, is something which can be measured pretty accurately. Perhaps the reserve is controlled by the Syndicate—which can regulate production to some extent—but even so the reserve is a thing which can be measured.

## Only Two Weeks Supply.

At the present time it is found that the reserve is lower than it has been for many years—lower indeed than it has ever been, as far as can be told. Some estimates have put the supply of to-day at twelve or thirteen thousand tons, but private advice from London, to one of Canada's largest metal houses, states that this estimate is much too large. The reserve to-day, it is declared, is not really in excess of 9,000 tons—about two

weeks supply—and all but 3,706 tons of this is afloat.

With this greatly reduced supply there is a demand for more tin than ever before. Tin is being used in more ways. The growing favor of metal roofing has brought a new demand for the metal. So with other things. Manufacturers in Canada are using much more tin than in former years, and it is so in all countries.

## Some Enlightening Figures.

A glance at statistics will show something of this question of supply. In 1902 there was a reserve of 17,027 tons (2,240 lbs. to the ton) in 1905 the supply dropped to 13,492 tons, and the price of tin advanced. In 1906 the reserve fell to 12,417 tons, and tin touched an average of £180 12s 11d. The supply in 1909 became greater, being quoted at 19,803 tons. This increase in the supply, it will be noted, brought with it a decrease in the cost of the metal. The average price for the year being £133 4s 4d. But in 1911 the reserve fell off again, the stock being 16,404 tons. Then this year reserves have sunk lower, below the ten thousand ton mark. With the fall has come a great advance in values.

Just what has caused the decrease in the reserve is hard to say. Some of the mines are less productive than they were—but not all. Perhaps the great reason is the tremendous increase in the consumption. It eats up any increased production there may be, and gnaws into the reserve. Take an example. In the United States alone the consumption in 1902 was 2,825 tons per month. In 1911 this consumption had risen to 3,692 tons a month—an increased consumption of 867 tons a month or 10,404 tons in the year. That increased consumption for the one country would more than eat up the world's reserve at the present time.

## Market Less Spectacular.

One change which has come in the last year—and a change which is worthy of note,—is a change both in the syndicate which largely controls the market, and in the methods adopted by this syndicate. Last year the movements were spectacular. Tin would jump £10 in a day. Now the Continental syndicate works more quietly. Prices move, but they move more steadily. There are not as rapid changes in one direction or the other. The movement is generally upward, but more and more the opinion is growing that this movement is not so much the result of direct manipulation as of the general business condition, which sees more tin required, and less, in proportion, available to fill orders.

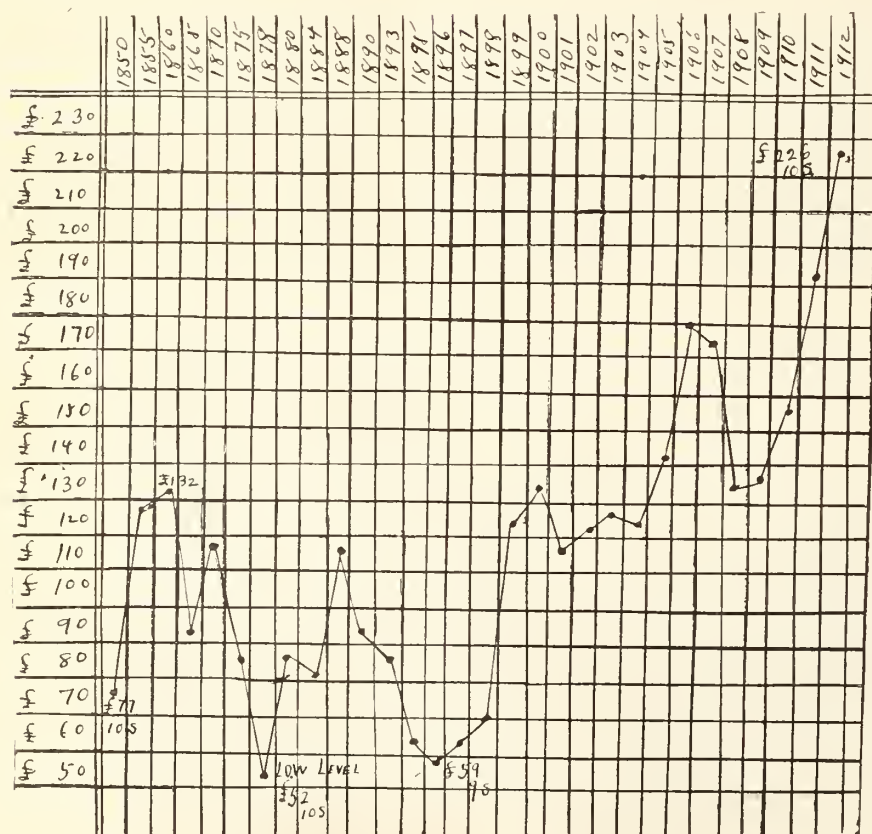


Chart showing the fluctuations of tin for the past sixty years. The prices shown are averages for the year, it must be remembered, with the exception of the low level of 1878 and the price of to-day. It should also be borne in mind that in June, 1911, tin sold as high as £233.



# Tips for Helpers---By "Phoenix"

There has always been a great howl among the plumbers and steamfitters about the "Practical Man." The practical man being, according to their way of thinking, the one who was brought up in the shop. The more that he "smelled" of the shop, the greater his practicality.

Now, perhaps, in the old days, when the plumber sometimes carried his entire stock of tools and goods in a push cart and when about all that was known of the business was held in the craniums of those who worked at the trade, the idea just mentioned of the practical man, his virtues, etc., was not so very far from the mark.

But it is miles and miles away from the mark to-day. To my mind a man is decidedly NOT practical unless he knows the very best practices and also the theory as well. He must not only be able to turn his hand to any trick of

I am not claiming for one moment that when the student goes through the school that he knows it all, and that he will be able to go into the shop and do up the best man there who has had the shop training only. The school boy will never do any such thing. It is not in the dictionary that he should. He will lack the real experience of actual business and installation work. But all the same he will know the how and why of about one thousand things of which the mere shop trained boy or man has never got next to and never will if he just sticks to shop ways and customs.

The trade has grown to take in so many things that never "used to be" in the old days, so much has been written and found out, that a mere shop trained hand isn't even a decent helper (in the broad sense of the word) for the shop of to-day.

Again, and there is no need of beating about the bush and denying the fact, the student who attends one of these schools will be able to learn far more about the trade in less time than he would in the shop. Just how much less I am not prepared to say. It would depend something upon the pupil's ability and the steadiness of his attendance at the school. Probably the best results are obtained by his attending the school for a certain time (say three months) and then going to the shop for an equal time or longer and getting the actual experience of what he has learned after which go back to the school and then so repeat the medicine until he has finished the course. This would give him the complete course and at the same time the actual shop work.

There isn't any question but what such a boy will be far better than the shop-trained boy or the boy who has passed his entire time in the school. This shop trained, student trained boy will have been able to get wise to the game at both ends of the route and when he has completed it all, he will be an experienced, trained, practical man.

There are no getting around these facts. Neither the trade school or the shop will develop an entire practical trained man complete. The technical men may talk, the shop men may talk, but talking does not turn the trick; it's experience that tells the story.

When I first went into the shop to "learn the trade" it was months and months before I was allowed to make the attempt to caulk a joint on the

soil pipe. Now caulking a common joint of this kind is not a difficult trick at all. I would not give much for the services of a man who could not do it right in a week's time. Indeed, some of them will catch on in a day's time, if they are allowed the chance.

Of course there are various tricks and turns that will have to be learned by more time; but I am talking about just the common 4 in. soil pipe joint. It isn't a sacredly, secret operation any more, and all this mummary about it's being such a trick is mere rot.

When a common farmer who does not know a ladle from a melting pot, only as they are labelled can take the printed directions of a mail order house and after reading same, go on and caulk and pour these soil pipe joints, I guess that there isn't so very much to it. It's sure time that some of these pig-headed

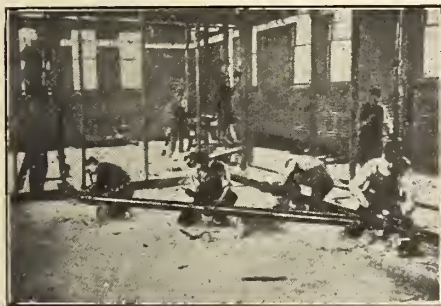


Fig. 1.

the trade, but he must know just why it is so and be able to tell it in an understandable manner. Now in just about one case in a thousand will you find that a boy who has come up through the shop without having any other instruction is able to do this.

He might tell some part of it, but he would leave something out because he has not been trained along any systematic line. He does not know how to arrange matters in any kind of logical order.

This kick about the training school, the trade school is all to the bad and is made only by people who are greatly prejudiced in the matter. They are afraid that somebody will get into the business that knows more about the business than they do. Right down in their hearts they know that the practical education that the student gets is of vast benefit and can not help but be a great eye-opener for him.



Fig. 2.

plumbers woke up and got next to themselves. Merely calling the mail order houses bad names will never stop their doing business. Then again every time the plumber opens his mouth he gives the mail order house a free "ad" and that is just what they like.

In Fig. 1, of this article, you have the illustration of how the student is taught to caulk the pipe in one of the trade schools established for the purpose. You will observe that the pipe is in all kinds of positions and that the students are getting right after the work. They are instructed first and then must do the actual work. Isn't this better than waiting six months in some shop for the ing six months in some shop for the chance to get at the pipe and isn't it more practical?

The practical part of it rather gets connected up with the school now-a-days

Concluded on page 20.



# Complete Course in Sheet Metal Work

By L. W. KOSER

In Prob. 18, Fig. 1 is a watering can, in which 1, 2, 3, represents the brest; A, B, C, D the different parts of the spout, E the top handle, and F the side handle.

To get the handle F, divide it into equal spaces and lay out a stretchout of same, make it the desired width at top and bottom. Notch the corners for turning around the wire, form to shape similar to Fig. 4, put in wire and rivet and solder to can.

To get the top handle E, draw a profile of same similar to Fig. 6, and lay out the stretchout as Fig. 5, form to shape similar to Y and Fig. 6, and solder to can. On large cans it is well to allow a flange to come down on sides of can for riveting.

To get the brest 1, 2, 3, set the point of the compass at 1, and the lead at 3, Fig. 1, and with any convenient point as

centre, as G., Fig. 7, describe the arc NM. Lay off the stretchout of one-half of the can, as 1 to 7.

Then N, G, M represents the three points through which it is desired to draw an arc.

Find the centre O, as described for Prob. 15, and with O as centre, describe the arc NGM. Allow for flanges.

Prob. 19 shows how to develop the pattern for the spout.

First draw a vertical line representing the side of the can.

Then draw the cone PXX, representing the spout. (See Figs. 2 and 5) A, and joining the side of the can at C and D.

The first thing we want to do is to develop the mitre line CED.

Directly below the can and in line with it draw the circle Fig. 3, the same

diameter as the can. From the centre O draw the horizontal line OV.

Drop a vertical as K from the point P for Fig. 2, cutting the line OV at V.

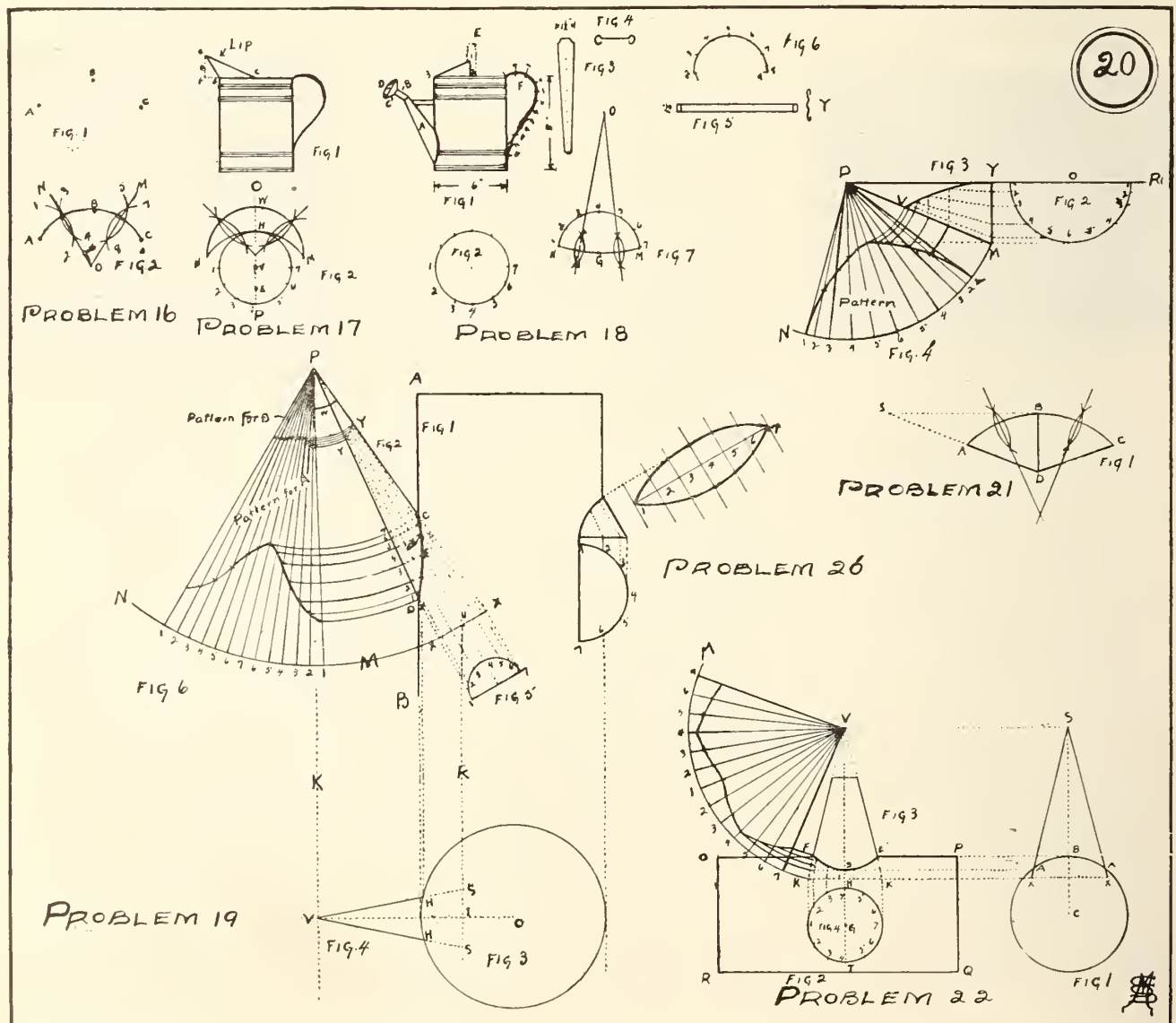
Drop a vertical line as R from the centre of the base XX as U, and cut through the line OV.

Lay out the base line XUX on this line as shown by the points SIS. Fig. 2.

Draw a line from the points SS into the point V, thus getting the points where the sides of the cone or spout meet the sides of the can, as HH.

Project a vertical line from H until it meets the centre line PU as at E. Then draw the line CED, which will be the mitre line.

The pattern for the bottom of the cone or spout is developed the same as explained for Prob. 6, plate 18. But in



order to impress it more fully on the mind of the student, we will again explain it as it is here illustrated.

Drop the centre line PU of the cone any distance below the base line XX. With the point of the compass on this line and with a radius equal to XU (or  $\frac{1}{2}$  the diameter of the base of the cone) describe the semi-circle Fig. 5 and divide it off into equal spaces and number each.

Project lines parallel to the centre line up to the base line XX, and then carry them toward the point P, and where they meet the mitre line CED and the top line YY, carry them at right angles to the centre line PU out to the side line PD.

Then with the point of the compass at P and the lead at the base of the

cone as X, describe an arc NM, and on this lay out the stretchout of the base of the cone as Fig. 5.

Bring the lead against each of the points on the line PD, and swing an arc cutting the corresponding line.

The part C of the watering can is just a plain frustrum of a cone, and the part D is hollowed out and punched. Zinc roses, however, can be purchased from any hollowware manufacturing company.

Prob. 20, plate 20, gives the development of a handle some time used on coal scuttles, etc. The principle of developing is the same as the gore piece of a three-piece elbow and needs no further explanation than that shown by the drawing.

Prob. 21 shows the development of a scale scoop.

Fig. 1 represents the scoop. The curved line ABC is drawn as explained for prob. 16.

Carry a light or dotted line horizontally from B and intersect this at S by a line extended from AD.

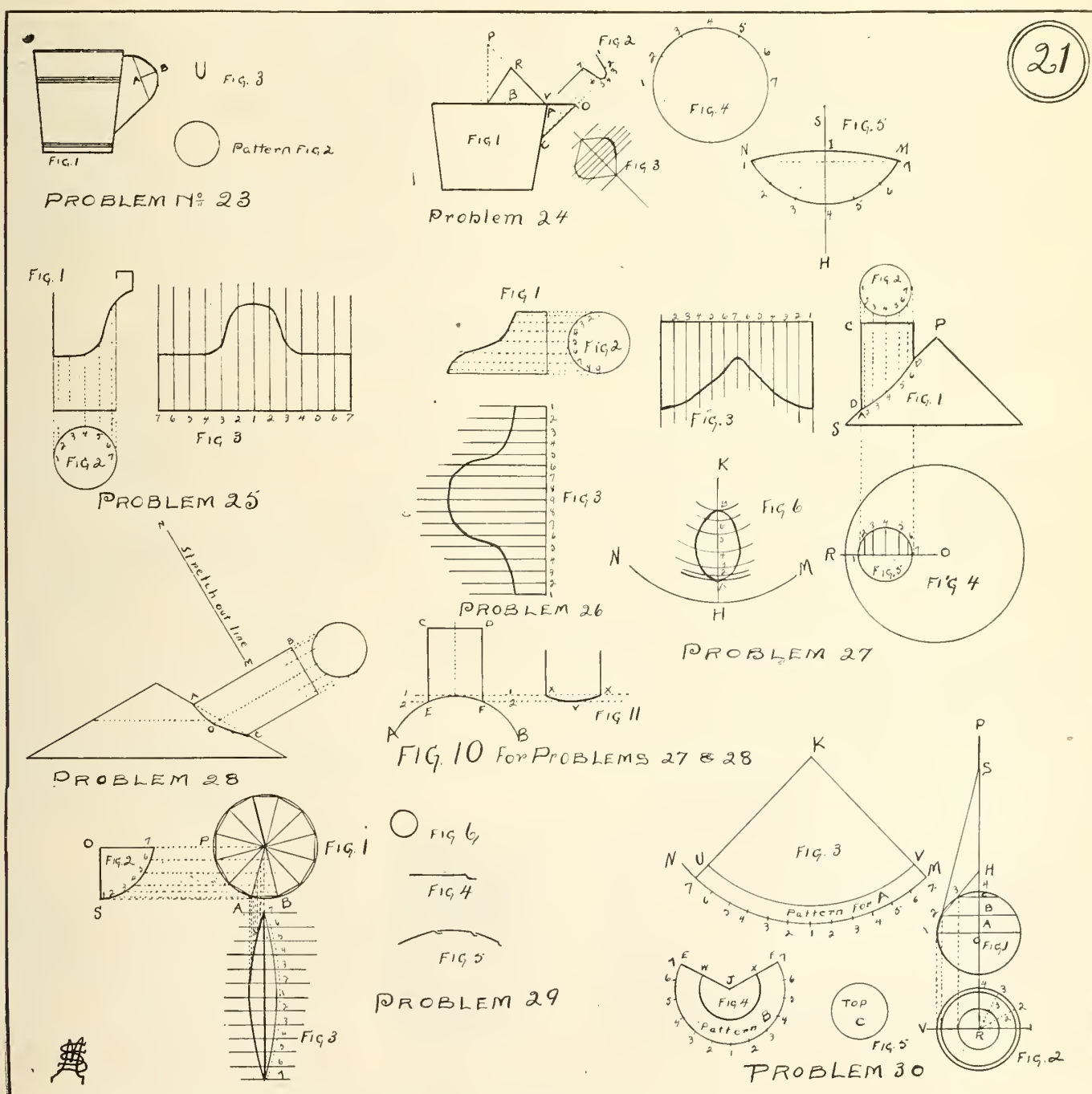
At any convenient place lay out the long horizontal line PR.

Set the space SB of Fig. 1 on this line, as shown by PY, Fig. 3.

Drop a vertical line YM, making it vertical to BD of Fig. 1, and carry a line from M to the point P.

Draw in this space  $\frac{1}{2}$  of the scoop,  
as shown by the line VY.

With any convenient point on the line PR for centre, as O, and with radius





equal to BD of Fig. 1, draw the circle Fig. 2.

Divide this off into equal spaces, and subdivide the top parts, making them about one-half the width of the others, the reason for this being that the greater slant of the pattern is at the sides, and consequently the spaces require to be closer together. The same result is ar-

rived at by dividing the circle into smaller spaces, but this makes more lines to handle in developing the pattern.

Having divided the spaces and numbered same, we will now carry horizontal lines to the vertical line YM, and from thence toward the point P, until they meet the profile line VY; then drop them vertically to the slant line PM.

Set the point of the compass at P, and the lead at M, and describe the arc NM, on which lay off the stretchout of Fig. 2, at the same as it is spaced thereon.

Draw lines into the centre P, with P as a centre, swing an arc from the points on the line PM, and the pattern will be developed. Allow for flanges.

# Taking Advantage of Opportunities

The Sanitary Engineers Should Advertise in Order to Widen the Scope of His Business—Special Advertising Should be Done in Large Space—Forms of Exaggeration Should be Avoided.

THE sanitary engineer who advertises—he belongs to a rare class unfortunately—is always looking out for a special opportunity to make his advertising effective. He sees an opportunity to widen his clientele, to secure some good sane contracts by effective advertising. A special opportunity necessitates special advertising efforts. To attempt to stage a sale without investing a certain amount of coin of the realm in printers' ink is highly fatuous and short-sighted.

This is one case where it is possible to lay down a hard and fast rule. Advertising of a special nature should be done in big space. The plumber cannot afford to have his announcement overlooked.

Still there is no reason why the advertiser should go to the extreme in this respect. It is a common practice for announcements to be written in lurid style and printed in type of enormous size. The headlines seldom vary. Here are some of them:

Unprecedented Opportunity?  
Our Work Cannot Be Equalled!

Advertisements of this nature often serve to defeat their own ends. They are too flamboyant in style and too heavy in construction. An exaggerated claim is never accepted at its face value. While the special advertiser must make a certain amount of noise in the commercial world, he need not become stentorian and raucous.

Yes, good-sized space should be used and bold type should be pressed into service. The announcement must "stand out." At the same time, the announcement should not be entirely lacking in dignity and, what is even more important, it should possess the elements of originality. Nothing original results when a man tries to write a headline which will impress on the public that his proposition is wonderful and peculiarly epochal. Unable to find words to adequately express himself, he generally ends up with something like this:—"Unprecedented Opportunity!"—set up in 96 point Mammoth.

Why not a sane statement of the real

facts of the case. Originality can then be obtained and the announcement has more weight.

The advertisement reproduced is that of T. A. Cowan & Co., Brantford. It was used at a time when the fall rush in building was starting. There had been an unprecedented amount of building in Brantford and, consequently, there was a great amount of work to be done in the plumbing, heating and electrical lines. Cowan & Co. decided to make a special advertising effort in view of this opportunity.

The advertisement occupied a half page in the local newspapers. It is a well-balanced advertisement. The arguments are effectively couched and the general lay-out is so excellent that we have no hesitation in pronouncing this to be an advertisement of unusual merit.




## TIPS TO HELPERS.

(Concluded from page 18.)

somehow. In Fig. 2 the youth in the fore part of the picture has evidently gotten something on his mind in regard to the blue print which he desires to ask the instructor at the desk about. "Blue print." Say, I am ashamed to tell you how long it was before I could read one and do it right. In the background of this same picture the students can be observed at various tasks under actual instruction.

You can form your own conclusions for yourself as to the way these students will stack up when they have a few years of actual experience in the regular installation of work in the shop. To my mind the man who sets his face against practical education as it is taught today in most lands; that man simply is cutting off his nose to spite his face.



**DON'T**

*Neglect These Three Important Matters in the Building of Your Home:*

**Plumbing**


*You will have Plumbing, certainly. But don't let it go at that. Leave it in the hands of a firm with a reputation for good work. Then the health and comfort of your family is assured.*

**Heating**

*Think of it—about six months in the year we must have heat, and what is more disagreeable and dangerous than a poorly heated home?*


**Lighting**

*It's wonderful what beauty and utility can be obtained by investing a few dollars in nice Lighting Fixtures. Never let Price decide these matters—but Satisfaction, Beauty and Durability—Visit Our Showrooms*

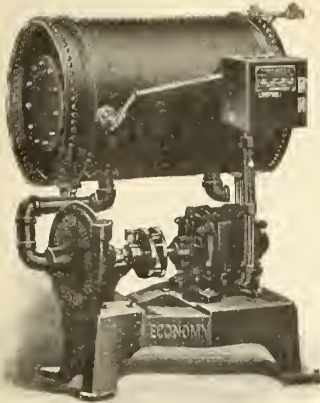


**T. A. COWAN,** 81 COLBORNE STREET, BRANTFORD

HIGH-CLASS PLUMBING, HEATING, LIGHTING



A half-page advertisement of T. A. Cowan & Co., Brantford.



**Economy Automatic Condensation Pump and Receiver**

An expansion tank, an automatic switch and a centrifugal pump automatically operated by an electric motor. Stimulates circulation by drawing condensation through system, venting the air and returning the water to the boiler at high temperature. Eliminates snapping and cracking in the radiators and pipes. A stimulant and governor to the entire system. A great saver of fuel. Requires no attention other than an occasional oiling. Operates equally well on high or low pressure systems. Tell us your troubles and we will advise you how to overcome them.

**THOMAS & SMITH, Inc.**

116-18 N Carpenter St., CHICAGO, ILL.  
JAS. J. MARTINDALE, 112 Mail and Empire Bldg., Toronto Representative

**STORE MANAGEMENT—COMPLETE**

16 Full-Page Illustrations



272 Pages  
Bound in Cloth

ANOTHER NEW BOOK

By FRANK FARRINGTON

A Companion book to Retail Advertising Complete

\$1.00 POSTPAID

"Store Management—Complete" tells all about the management of a store so that not only the greatest sales but the largest profit may be realized.

**THIRTEEN CHAPTERS**

Here is a sample:

CHAPTER V.—The Store Policy—What it should be to hold trade. The money-back plan. Taking back goods. Meeting cut rates. Selling remnants. Delivering goods. Substitution. Handling telephone calls. Rebating railroad fare. Courtesy to customers.

ABSOLUTELY NEW

JUST PUBLISHED

Send us \$1.00. Keep the book ten days and if it isn't worth the price return it and get your money back.

TECHNICAL BOOK DEPARTMENT

143-149 University Ave., Toronto, Canada.

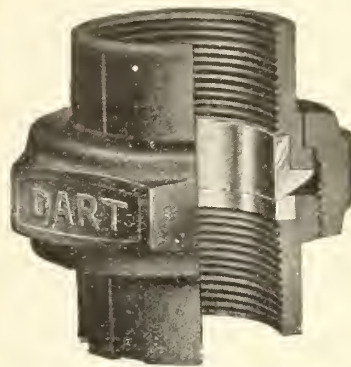
**SAVE TIME**

And Make Sure Of Satisfied Customers By Using

**DART UNIONS**

The Dart saves time because pipes can be quickly and easily connected, whether pipes are in or out of line.

The Dart Satisfies Customers, as the Bronze to Bronze Ball Shaped Joint Cannot Leak, Rust or Corrode. The Dart stays perfectly tight—it will never leak until deliberately loosened. Makes joints time and time again without injuring its efficiency or long life.



If any Dart Union should prove defective we will give you two new ones for it—that's our guarantee.

Your jobber sells them.

**Dart Union Co.**

LIMITED

TORONTO ONTARIO



Write us about our  
"Victorian" China Lavatories.

**The James Morrison  
Brass Mfg. Co., Ltd.**

93-97 Adelaide Street West

TORONTO

We Can Furnish  
Your Requirements in All

**PLUMBING GOODS**

We handle a complete line of

**Enameled Baths**

**Enameled Lavatories**

**Sinks and Laundry Tubs**





## Condensed or "Want" Ads.

### FOR SALE

FOR SALE — FIRST-CLASS PLUMBING and tin-smithing business in a booming town of about 2,000, the only one within eleven miles. First-class farming trade. Unfinished contracts turned over to purchaser. Owner going west. For particulars, apply to Box 84, Durham, Ontario. (23)

### PRICE TICKETS

PRICE TICKETS FOR WINDOW SHOW goods. Black lettering on white card marked 25c, 50c, 75c, \$1, \$1.25, \$1.50, \$1.75, \$2, \$2.50, \$3, \$3.50, \$5. Dozen in set, per set 25 cents post-paid. Technical Book Dept., 143 University Ave., Toronto. (tf)

### MISCELLANEOUS.

ADDING TYPEWRITERS WRITE, ADD OR subtract in one operation. Elliott Fisher, Limited, Room 314 Stair Building, Toronto.

BUSINESS - GETTING TYPEWRITTEN letters and real printing can be quickly and easily turned out by the Multigraph in your own office—actual typewriting for letter forms, real printing for stationery and advertising, saving 25% to 75% of average annual printing cost. American Multigraph Sales Co., Limited, 129 Bay St., Toronto.

COPELAND - CHATTERSON SYSTEMS — Short, simple. Adapted to all classes of business. The Copeland-Chatterson Company, Limited, Toronto and Ottawa. (tf)

COUNTER CHECK BOOKS—WRITE US to-day for samples. We are manufacturers of the famous Surety Non-Smut Duplicating and Triplicating Counter Check Books and Single Carbon Pads in all varieties. Dominion Register Co., Ltd., Toronto.

COUNTER CHECK BOOKS—ESPECIALLY made for the plumbing and steamfitting trade. Not made by a trust. Send us samples of what you are using—we'll send you right prices. Our holder with patent carbon attachment has no equal on the market. Supplies for binders and monthly account systems. Business Systems, Limited. Manufacturing Stationers, Toronto.

FIRE INSURANCE. — INSURE IN THE Hartford. Agencies everywhere in Canada. (tf)

KAY'S FURNITURE CATALOGUE No. 306 contains 160 pages of fine half-tone engravings of newest designs in carpets, rugs, furniture, draperies, wallpapers and pottery with cash prices. Write for a copy—it's free. John Kay Company, Limited, 36 King St. West, Toronto.

YOU DON'T BUY A NATIONAL CASH Register—it pays for itself. Saves money. Prevents mistakes. We can prove it. National Cash Register Co., 285 Yonge Street, Toronto.

### TECHNICAL BOOKS

SALES PLANS—THIS BOOK IS A COLLECTION of 333 successful plans that have been used by retail merchants to get more business. These include Special Sales, Getting Holiday Business, Co-operative Advertising, Money-Making Ideas, Contests, etc. Price \$2.50, post paid. MacLean Publishing Co., Technical Book Dept., 143-149 University Avenue, Toronto.

**The Condensed Ads. in this Paper will bring good results**



## GENUINE ARMSTRONG STOCKS and DIES

FOR THREADING PIPE OR BOLTS

KNOWN, USED,  
COMMENDED EVERYWHERE

PIPE MACHINES,

both Hand or Power

HINGED PIPE VISES

PIPE CUTTERS

PIPE WRENCHES

RATCHET ATTACHMENTS

BARD ADJUSTABLE  
BUSHINGS

Manufactured by

**THE ARMSTRONG M'F'G.  
CO.**

317 Knowlton St.

BRIDGEPORT, CONN., U.S.A.  
NEW YORK CHICAGO

WRITE FOR CATALOG

## SYPHONS

FOR

SEPTIC TANKS

ALLAN POPE - Montreal

Keep in mind the dominant fact that mankind from its first appearance on the earth has been schooled by nature to look for signs; for invitations to taste; for suggestions as to what to wear. Tell your story briefly, forcibly, truthfully, and address it through the proper media and you can successfully apply advertising as a means to increased distribution.

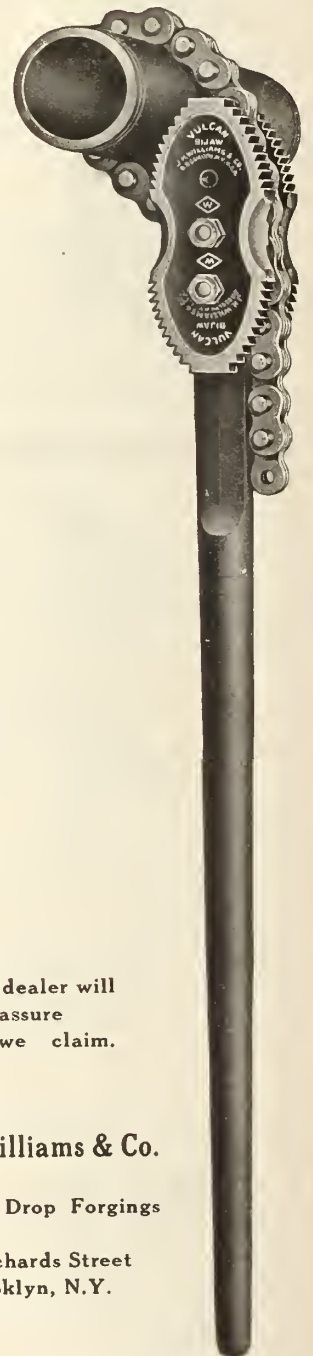
A want ad. in this paper will bring replies from all parts of Canada.

Each "Vulcan" chain is tested in a standard tension machine up to two-thirds of its breaking strain listed in catalogue table. The chain so tested is stamped "O" on the drop-forged swinging link, thus absolutely establishing the safety-factor and reliability of every wrench.

Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. No other pipe tool is similarly proved.

## "VULCAN"

### Chain Pipe Wrenches



Your dealer will  
assure  
all we claim.

**J. H. Williams & Co.**

Superior Drop Forgings

77 Richards Street  
Brooklyn, N.Y.

QUALITY

# National Valves

PRICE

*Best from every point*

The sterling quality back of National Valves pleases the men who sell, install and use them

The secret of National Valve success is very simple—just the embodiment of all that's best in valve construction, at a price as low as the quality permits. The quality feature we maintain above everything else, and now National Valves are recognized as the standard of perfection throughout Canada and the United States.

It pays plumbers and steamfitters to install them; it pays dealers to sell them. Write for details of our dealers' proposition.



No. 9 Vacuum Valve

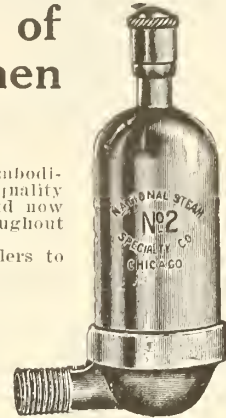
## NO. 9 VACUUM VALVE

This is adjustable only by a key, which makes it fool-proof. It is protected against deformation of the composition by a brass encasement. Guaranteed perfect operation for five years.

*Write for particulars and prices of the complete National line*

## NO. 2 VALVE

High enough in quality to compete with high price valves on particular work, and low enough in price to meet cheap competition. This is admitted to be the best of the low-priced valves.



## NATIONAL STEAM SPECIALTY CO.

24-26 S. Clinton Street, - - Chicago

L. N. Vanstone, 8 Wellington St. East, Toronto; Moncrieff & Endress, Ltd., Scott Bldg., Winnipeg; Surpluss, Dunn & Co., 74 Murray St., New York. See Sweet's Index, pages 1139, 1140, 1141.

PROFIT

SALES



Hot Water Quick Opening Radiator Valve.

## "MILLER" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from 1/2 in. to 2 in., with or without union, also union elbows.

Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.



Steam Radiator Valve.

**MILLER LIMITED - LONDON, CAN.**

## STRICTLY SOLDER FOR GALVANIZED IRON WORKERS



## EASY WIPING SOLDER

For Particular Plumbers

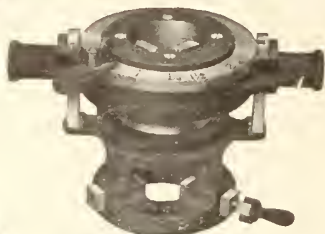
These are two specially good solders.

Manufactured and Guaranteed by

**THE CANADA METAL CO., Limited**  
TORONTO MONTREAL WINNIPEG



# WHICH



1 to 2 in. 25B. Beaver

do you prefer—to pay two men to thread a 2 in. pipe with an ordinary die stock, or pay one man to do it with a

## **“Beaver” Adjustable Die Stock**

### IN LESS TIME ?

Each “Beaver” stock contains one set of dies which can be used to cut four different threads—a twist of the wrist sets the size.

This eliminates the buying of three die sets, and the loss of much time that is incurred through sorting out dies for certain work.

The “Beaver” makes a mechanically perfect thread, and is the most convenient Die Stock on the market.

Get our circulars and prices at once.

We make a specialty of regrinding all makes of dies. Express must be prepaid.



RAPID WORKERS

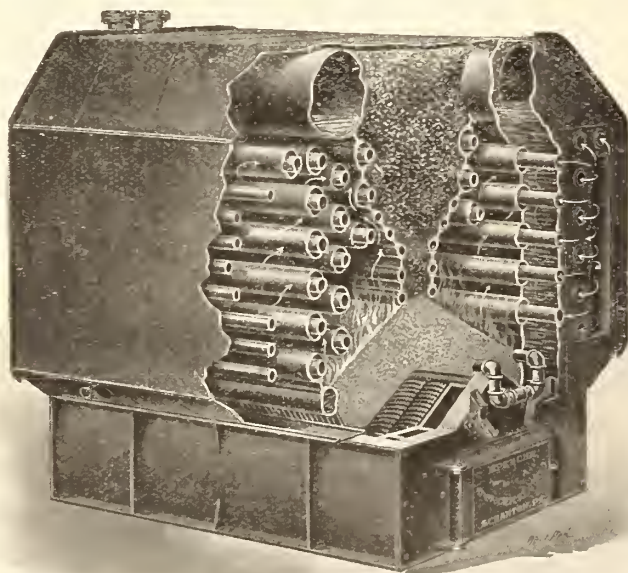
**Borden-Canadian Co.**

66 Richmond St. East, Toronto, Ont.



## How Spencer Self Feed Boilers Save

Other boilers burn stove or egg coal which will cost \$8.00 or more a ton in Toronto, or \$11.50 or more a ton in Winnipeg. The Spencer burns No. 1 Buckwheat, or pea, which is much cheaper, and no higher in price than it was last year.



## Help Your Customers To Save Coal Bills!

Every residence in which you install a Spencer Boiler will be the finest kind of advertisement for you.

Being a Spencer Booster stamps you as being up to the minute. For the Spencer is the last word in the construction of boilers for service and economy.

The Spencer will give you preference on every residence job, over your competitors who handle the old style boilers.

### WE CAN FILL ALL ORDERS PROMPTLY

We have good stock of Boilers suitable for residence work, and you will not be held up on any contract in which you use a Spencer.

Write us and ask all about the Spencer Construction. We'll tell you why the Spencer gives even temperature on a small consumption of low-priced fuel.

**WALDON COMPANY LTD.**

92 Princess Street, WINNIPEG  
Lumsden Building, TORONTO

# "Adanac" Basin Cock

[Patented]

## QUICK OPENING

A REAL ARISTOCRAT IN EVERY DETAIL:

Design  
Material  
Workmanship  
Finish  
No Fuller Ball

One-eighth turn gives full flow.

Doesn't it appeal to you?

Unconditionally guaranteed, but developed to eliminate faults.

MANUFACTURED ONLY BY

**Canadian Brass Co., Limited**  
GALT, - ONT.



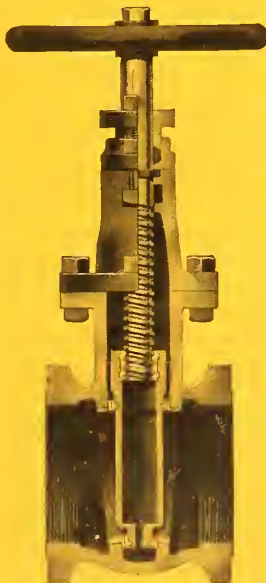
Design Registered

## K E R R

### (New "KEYSTONE" Pattern) GATE VALVES



If you have not used any of these New Pattern Valves, specify "KERR" in your next order. We want you to get acquainted with the most reliable valve on the market.



If you have been using them, we are confident that your satisfaction will bring us your repeat orders. These valves will never cause you or your customer the slightest trouble. Their high quality is consistent.



When you buy a "KERR" Valve you get a guaranteed article that is backed by a reliable firm. Many of the largest distributors of valves in Canada have sold "KERR" Valves for over 25 years, and are still recommending them as the "Best Valve."

Write us for particulars.

**Kerr Engine Co., Ltd.,**

Valve Specialists

**Walkerville, Ont.**



## Results Count

For lasting satisfaction try the GALT line of Compression and Fuller work, Traps, Supplies, Combination Waste and Overflows, etc. It shows the result of good material, good workmanship; is graceful in design and pleasing in appearance.

UNCONDITIONALLY GUARANTEED

**The GALT BRASS MFG. CO., Limited**  
Galt, Ont.

AGENCIES:

VANCOUVER

Geo. E. Griffith

WINNIPEG

E. B. Plewes

TORONTO

R. S. Alexander

WESTERN ONTARIO

T. W. Meriam



*"We can state that  
**Empire Tanks**  
are the best"*

The above is an extract from a letter received from one of the largest plumbing shops in the Province.

This decision was only arrived at after a thorough trial, and nothing shows up the weak points, if any, like an actual test.

**EMPIRE CLOSETS**  
*are fully guaranteed*

EMPIRE WASHDOWN OUTFIT

**Empire Mfg. Co., Ltd.,** LONDON, ONT.

# PLUMBER & STEAMFITTER

*and Metal Worker of Canada*

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

MONTREAL, 701-702 Eastern Townships Bank Bldg.  
LONDON, ENG., 88 Fleet St. E.C.




TORONTO, 143-149 University Ave.  
CHICAGO, 140 S. Dearborn St.

WINNIPEG, 34 Royal Bank Building  
NEW YORK, 115 Broadway

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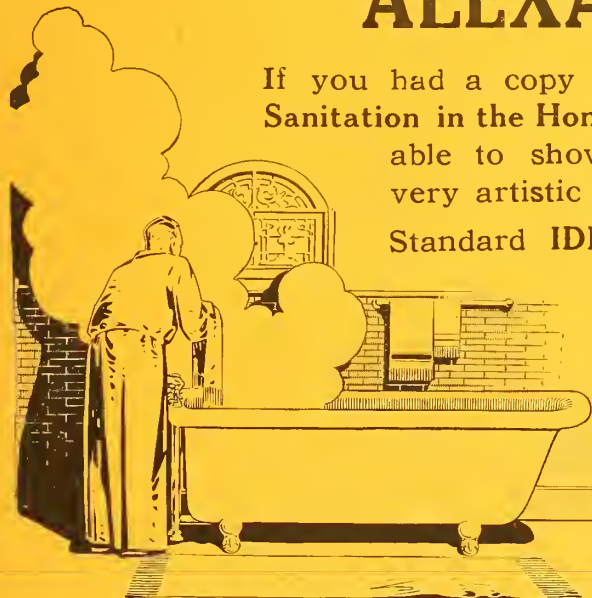


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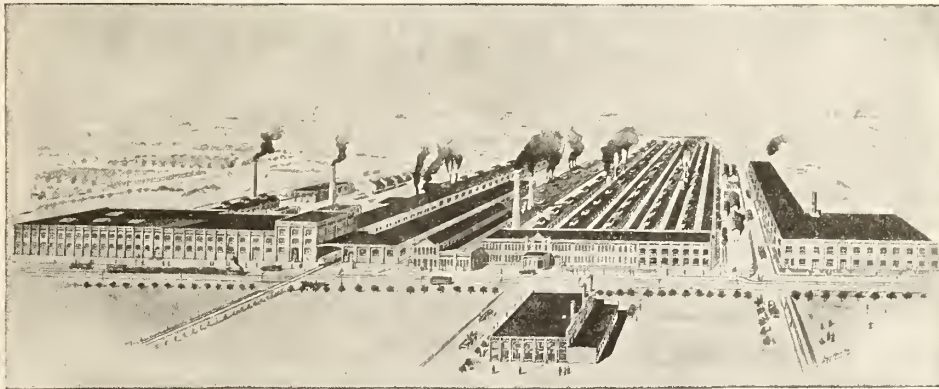
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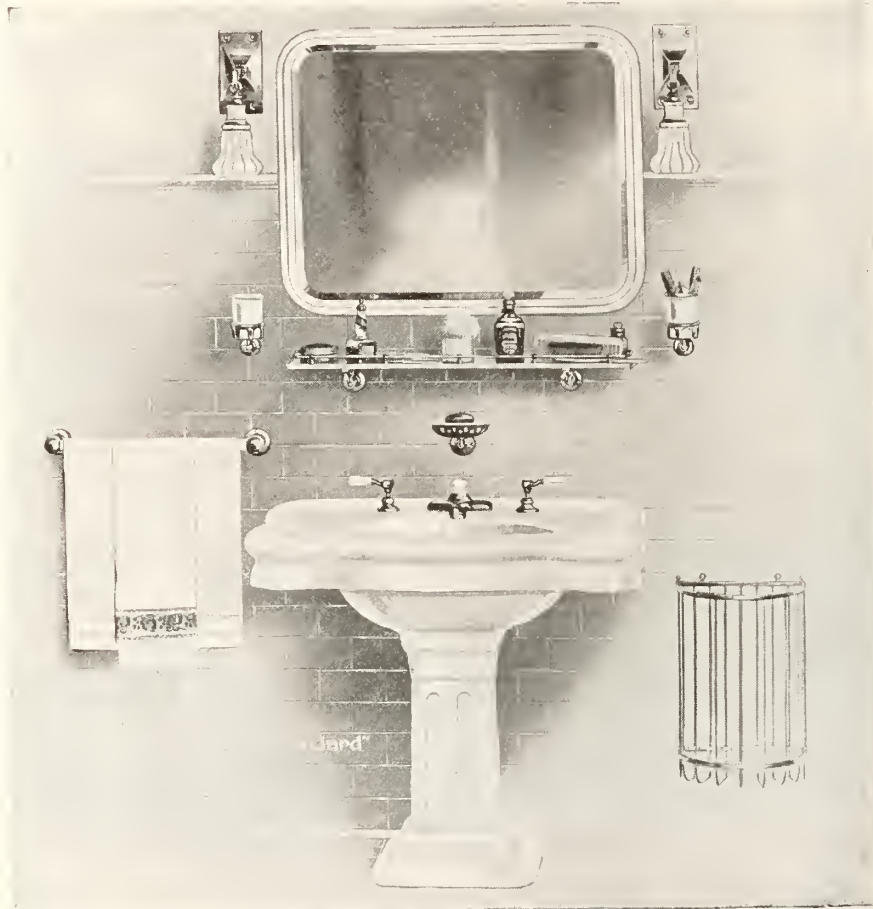
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"Standard Sanitary" Porcelain Enameled Lavatories surpass all others in beauty of design and finish and are warranted against defective material and workmanship.

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## A Boiler That Will Increase Your TRADE

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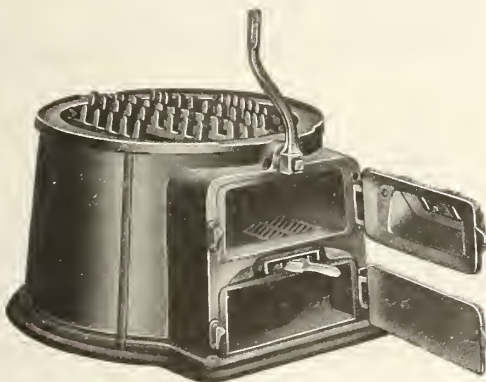
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

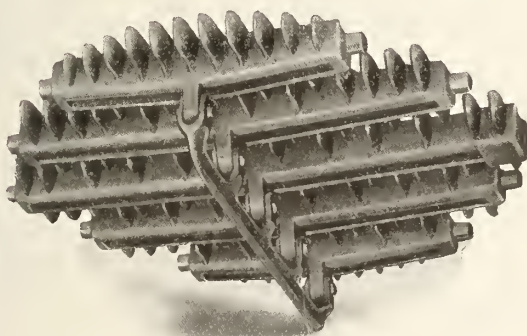
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

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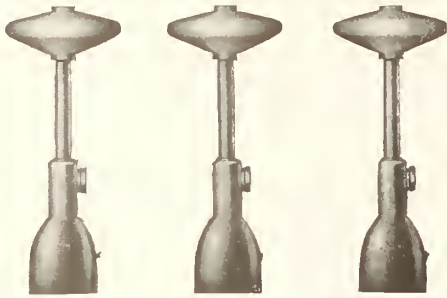
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The universal success, the never-disappointing operation of the Honeywell hot-water system has proven conclusively that the theory upon which it is based is correct even to the utmost detail.

An increased and positive circulation; an instantaneous heat under perfect control; quickly increased or checked; the use of smaller valves and piping; the sending of even heat into radiators at extreme distance from boiler; the one-end radiator tap, the saving of floors from "butchery": beams from weakening and ceilings from leak stains; minimum amount of piping an easy layout for the fitter, enabling expeditious placing of radiators, and the minimum cost of installation and operation.

All these points have been realized and proven by years of trial and thousands of plants in use in all countries.

Each feature combines to make the Honeywell the favorite method with house owners and the one generously and generally specified by far-seeing architects and heating contractors.

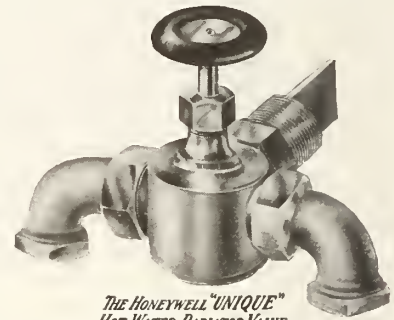
We would be pleased to furnish you with full information and engineering data.

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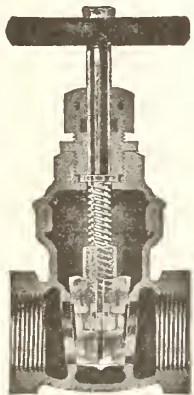
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where it took from two to four by the old method

A wonderfully proficient and simple tool to make or take off flanges.

One man can do more work in an hour with this tool than three can do in a forenoon in the old way.

Bolt the wrench to the face of the flange through the slots provided in the wheel—insert a length of pipe into the handle and the operation is continuous until the

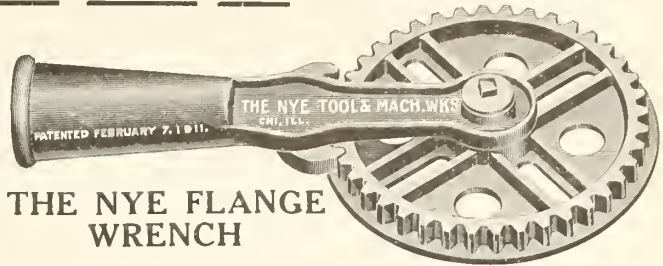
flange is made or taken off. Never slips—never burrs or scars the face of the flange.

**IT PAYS FOR ITSELF EVERY TIME IT IS USED**

I guarantee this wrench to give satisfaction and to do exactly what I claim it will do. If it doesn't, you get your money back. Here is a tool that the shop has needed for a long time. It makes simple what has been a tedious operation and it saves a lot of time and trouble. Why be annoyed by manhandling when a NYE FLANGE WRENCH will do the business in a jiffy.

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**"KING"** Round Water Boiler.

(Sizes 1 to 8½)

**"ROYAL"** Round Steam Boilers.

**"ROYAL"** Square Steam and Water Boilers  
(19" to 48")

**"KING"** Radiators, Water and Steam.

We have a great deal of pleasure in announcing to our friends in the Trade that **our complete line** of Boilers and Radiators for Steam or Water are now ready for delivery.

We have all sizes, from the smallest to the largest, in stock for immediate delivery.

## Prompt Shipment Guaranteed

SEE Sectional View of 36"  
**"ROYAL"** Steam Boiler.

## Heating Surfaces

NOTE the **Arched Fire Chamber** and greater **over hanging** heating surfaces, than any other cast iron boiler on the market.

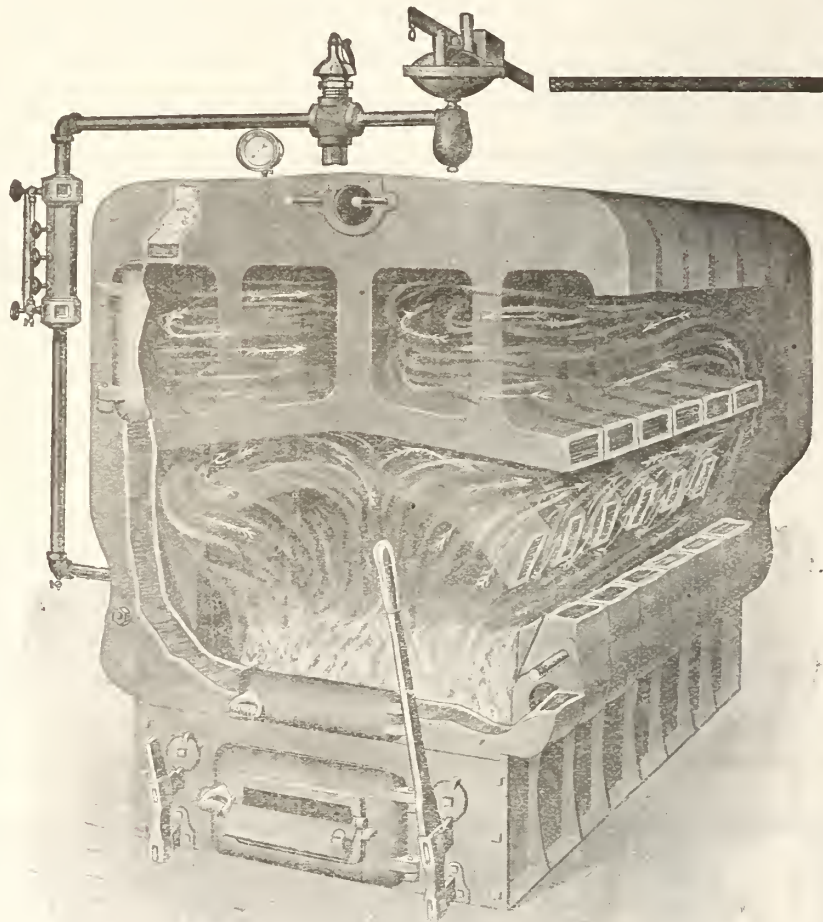
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# National Officers Start Campaign

Committees are Being Organized to Carry on Work Mapped Out at Recent Convention—Local Associations are Advised to Secure Election of Members on Local Boards of Health—The Question of Standardization.



*AS will be seen from the accompanying report, the officers of the Canadian Society of Domestic Sanitary and Heating Engineers are starting early to work on the programme which was mapped out at the last convention. It is their intention to make this a banner year, and to advance the best interests of the trade by an aggressive campaign all along the line against the evils which now exist. To make it within the power of the officers to carry out their plans to the letter, the hearty and active co-operation of all members will be necessary. It will be necessary for each member to do what he can personally to advance the good work.—Editor.*

**C**ALGARY, Alberta.—The new officers of the Canadian Society of Domestic Sanitary and Heating Engineers are already at work. The convention held here in July mapped out a big year's work for the officers and committee chairmen to follow out and it is going to mean a busy year for them.

The chairmen of the various committees are having their committees organized and will shortly be in a position to get to work on the various problems relating to their departments. The chairmen are:—Apprenticeship, J. Marshall, Port Arthur; Essay, Wm. Mansell, Toronto; Heating and Ventilating, John Watson, Westmount, Montreal; Legislative, E. L. Legrow, Toronto; Sanitary, Geo. Clapperton, Toronto.

## Problems of Standardization.

The two last named committees have a particularly busy year ahead. On them will devolve the work of directing the campaign for standardization. It has been recognized for a long time that the crying need of the trade is a standard sanitary ordinance for the whole Dominion. The complexity which has resulted from the great difference in ordinances in all parts of the country is highly detrimental. Nevertheless, it is not going to be an easy matter to accomplish this reform. Although it is recognized on all hands that it would be advisable to secure uniformity, the actual work is bound to prove long and laborious. Legislative bodies move slowly and it will take a great deal of aggressive and persistent work to bring the law-makers to the point where they will remedy this evil. It is a good thing that the legislative committee is in the able hands of Lewis Legrow and that he will have the assistance of Geo. Clapperton, who is chairman of the Sanitary Committee. Secretary Marr states that the officers are looking forward to "Something doing" in this matter before long.

## On Boards of Health.

The secretary desires to bring to the attention of the members, a resolution



James Marr, the energetic secretary, who has already started to work with vim.

which was passed by acclamation at the convention assembled here:

"That where possible, the members of our society should have representatives on their respective local health boards."

This is an important matter. The interests of the trade are deeply involved

in the work that comes under the scope of the boards of health. When there is an experienced plumber as a member of the board of health, the deliberations of that body become more practical and more real work is done. This has proved to be the case whenever members of the trade have secured membership on local boards. It would be well for local associations all over the country to consider this matter and to take steps, wherever possible, to secure a membership. It should not be found difficult for the inclusion of a plumber on a board, which governs matters of health and sanitation, is quite a logical development.

## Provincial Organization.

The work of provincial organization will be proceeded with also without delay. The national officers recognize the importance of having provincial associations organized and it is hoped that, before another year rolls around, the various provinces will all have favorable reports to submit.

Ontario, New Brunswick and Alberta are all in good shape now and the other provinces are expected to fall into line.

## R. Henderson Injured.

Toronto, Ont.—Among those injured at the wreck of the military train at Streetsville, was Robert Henderson, a master plumber. Mr. Henderson, who resides at 38 Macpherson avenue, had his right ankle injured in the shock.

## The Canadian Society of Domestic Sanitary and Heating Engineers

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H. Mahoney, Guelph

PRESIDENT

C. J. Henry, Calgary

SEC.-TREAS.

Jas. Marr, Calgary  
1010 12TH AVE. W.

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QUEBEC

A. W. Gardiner, Montreal

The letter head adopted by the Canadian Society of D. S. and H. E.



# Technical Classes are a Big Success

Many Plumbers and Fitters Attend Evening School at Calgary—Full Description of the Courses—Similar Steps are Urged in All Other Cities of the Dominion.

CALGARY, Alberta.—The officers of the C.S. of D.S. and H.E. are advocating that evening classes on technical courses of work be established in all parts of the country. There are technical schools to-day in practically all cities and towns in Canada but it is claimed that they do not go far enough. In many trades, men have no opportunity to secure tuition. This is particularly true of plumbing and heating work.

It is claimed that evening classes should be established at which men engaged in all trades could secure training at a reasonable charge.

The evening technical classes organized by the Calgary school board have been extremely successful and could be used as a model for similar classes in other places. The winter's work started during the first week of October with a large attendance.

It is interesting to note that an advisory board has been formed to help in the management of the classes. This board is made up of practical men in all trades. James Marr and R. J. Priestly are members as representatives of the sanitary and heating trades.

In deciding upon the continuation of the classes this winter, the board made the following announcement:—

The success of the scheme of Technical Education inaugurated by the Public School Board of the City of Calgary during the winter of 1911-12 showed that the evening technical classes then established had been welcomed by the workers in many industries carried on in this community. In consequence, a greatly enlarged scheme has been prepared for the session of 1912-13.

The heartiest co-operation has been given throughout by employers and the labor organizations, and a strong and representative committee of management has been appointed.

The session opens on Monday, October 7, and will continue until the end of March, 1913.

The following courses have been arranged and a strong staff of instructors engaged.

## Courses of Study.

Mechanical drawing.  
Machine drawing.  
Drawing for house carpenters.  
Building construction.  
Sheet metal drafting.  
Painting and decorating.  
Plumbing and sanitation.  
Heating and ventilation.

Electrotechnics.  
Shop mathematics.  
Applied mechanics.  
Practical arithmetic.  
Practical English.  
Cookery and household science.

## Commercial Courses.

Typewriting.  
Shorthand.  
Commercial Arithmetic.  
Business English.

## Conditions of Entrance.

There are no entrance examinations of any kind, but students are advised to consult the director or the class instructors if in doubt as to the class they should enter. Students in any of the drafting courses are strongly advised to take up in addition at least one of the courses in applied mechanics, practical arithmetic, shop mathematics and practical English. Students should be at least fourteen years of age, and engaged during the day at some industrial pursuit.

Each entrant has to make a deposit. Journeymen deposit \$5 and apprentices \$3. This deposit is returned at the end of the season on the basis of attendance. If the student has been on hand at all classes, he gets his full deposit back.

## Plumbing and Sanitation.

The instructor of these classes is A. J. Asherton and the classes are held on Mondays and Fridays from 7.30 to 9.30. The course is described as follows:

"This course is planned to meet the needs of those who are engaged in plumbing and sanitary work. On Monday evenings, lectures in theory will be given and on Friday evenings a course will be given in mechanical drawing especially designed for plumbers and sanitary workers. The course in drawing will lead to the ability to read and work from architects' plans, to design and lay out plumbing systems properly and to furnish satisfactory plans for health departments.

## Outline of Subjects.

"Properties and uses of materials used in plumbing. The nature and uses of seamless lead pipes, tin, tin-lined and sheet lead pipes, and methods of joining same. Roof work, hot water apparatus, range and boiler connections. The laying out of soil pipe, waste pipe, waste pipe to fixtures, ventilation, etc. Trap and pipe ventilation and its principles. Sanitary appliances and their action; water closets, baths, sinks, house cisterns, etc. Principles and descriptions

of traps, fittings and other appliances used in house drain construction. Elementary science for plumbers. The reading of plans.

"The drafting course will include:—

"Mechanical drawing and the use of instruments; simple detail drawings of fittings and appliances; floor plans and sectional elevations of buildings; drainage plans; complete layout of a plumbing system for a dwelling house or other simple building.

Note.—Students are strongly advised to take in addition the course in applied mechanics; also the course in practical arithmetic or shop mathematics."

## Heating and Ventilation.

Mr. Ashton is also instructor in this department and the classes are held on Wednesday and Fridays 7.30 to 9.30. The course is described as follows:—

"This course is planned to meet the needs of those who are engaged in steam and hot water fitting and heating and ventilating work. On Wednesday evenings lectures in theory will be given, and on Friday evenings a course will be given in mechanical drawing especially designed for workers in these trades. Nowadays every man must be able to read architects' plans and lay out systems correctly and economically by means of a drawing, and this part of the course is especially planned with these things in view.

## Outline of Course.

"The lectures will include the following:—

"Construction details of appliances and apparatus commonly employed in heating and ventilating engineering workwork, such as:—

"Steam and hot-water heating boilers of all types and their fittings. Steam and water-heated calorifiers and other water heating devices. Steam traps, reducing valves, automatic temperature control valves, thermostatic valves, all types of valves for controlling the flow of steam, water, gas, air, etc. Steam and water pressure gauges. Water level indicators and their connections. Boiler feeders, injectors, and other water delivering devices. Feed water regulating tanks. Expansion and feed tanks and their fittings. Storage tanks and cylinders and their fittings. Thermometers, hygrometers, barometers, anemometers, etc.

"Construction and properties of all types of radiators, coils and batteries, for steam and hot water heating and

their fittings for direct, direct-indirect and indirect heating.

"Methods of connecting cast iron, wrought iron, steel, brass and copper pipes, for steam, water and air distribution. Methods adopted to provide for expansion and flexibility of pipe systems.

"General proportions and construction of tee and branch pieces, riser connections, general and special fittings of cast, wrought and malleable iron, gun-metal, etc.

"Air inlet and outlet registers of all types and means adopted for their operation and regulation. Ducts and trunking for ventilating purposes; valves, dampers and other fittings.

"Hand and power tools required for bending, cutting, setting, screwing, flanging, jointing, etc., pipes and fittings on general installation work.

"Heat: Sensible and latent heat, specific heat, heat units, radiation, conduction, and convection of heat. Thermometric scales and their conversion.

"Air and its properties. The general gaseous equation, with arithmetical work regarding the weight and volume of gases corresponding to given conditions of pressure and temperature. Impurities in air. Properties of steam and water. Elementary heat calculations.

"The drafting course will include:—

"Mechanical drawing and the use of instruments; simple detail drawings of fittings and appliances; floor plans and sectional elevations of buildings; complete layout of a heating system for hot air, hot-water or steam, in an ordinary dwelling house.

"Note.—Students are strongly advised to take in addition the courses in practical arithmetic and applied mechanics."

## IMPORTANT PRICE CHANGES.

Montreal, Oct. 29. — A number of price changes which are important to the sanitary and heating engineer have been struck in the last week. Most of these, as was to be expected, have been in an upward direction, but lead has taken a drop.

In iron pipe, both black and galvanized, the advance has been about five per cent. The net prices now quoted in Montreal are:—

Black.	Inches.	Galvanized.
1.98	1/4	2.81
1.98	3/8	2.81
2.64	1/2	3.50
3.05	3/4	4.20
4.38	1	6.02
5.97	1 1/4	8.21
7.16	1 1/2	9.86
9.54	2	13.14
15.24	2 1/2	21.00
20.00	3	27.56
25.18	3 1/2	34.68
28.62	4	39.42

Sheets, too, have been advanced 20c a cwt., making the price for the 10 gauge \$2.70. All bright Canada plates have been advanced from \$2.90 to \$3.70. In galvanized sheets, corrugated, too there has been an advance of from 40 to 65 cents. The new prices are:

22 gauge, per square ....	6.75
24 gauge, per square ....	5.50
26 gauge, per square ....	4.25
28 gauge, per square ....	4.00

Heating Apparatus.—A general advance here has been struck, due to the advance in iron and other metals. The discount on hot water boilers is now quoted at 45 and 15 per cent. instead of 47 and 15. Hot water radiators are quoted at 42 and 15 per cent. in place of 45 and 15; steam radiators are listed at 44 and 15; instead of 46 and 15; while the new quotation on wall radiators is 37 and 15, in place of the former 40 and 15 per cent.

This week shows an advance of 5 per cent. in the price of eavetrough and corrugated metal. Elbows and sundries are still in great demand but no price change has been noted.

## Eavetrough. .O. G. Square Bead.

Latest quotations are as follows:

8 inch girth, per 100 ft. ....	\$3.02
10 inch girth, per 100 ft. ....	3.81
12 inch girth, per 100 ft. ....	3.88
15 inch girth, per 100 ft. . . .	5.53
Extra for round bead..10c per 100 ft.	
Extra for special shapes, 15c per 100 feet.	

## Conductorpipe—Plain or Corrugated.

2 inch in 10 ft. lengths. ....	3.45
3 inch in 10 ft. lengths. ....	4.20
4 inch in 10 ft. lengths. ....	5.53
5 inch in 10 ft. lengths. ....	7.60
6 inch in 10 ft. lengths. ....	9.26
Elbows and sundries same.	

## An Effective Reply is Made

IT is gratifying to note that the cudgels have been taken up in Toronto in reply to those who have been attacking the clauses of the proposed new plumbing by-law. The following reply was published in the public press:

Sir,—In view of the present agitation being engineered in opposition to the new plumbing by-law of the city by parties most directly interested in the manufacture of tile pipe, we believe at this time that some defence should be put forward on behalf of the finding of the committee.

Many false statements have been made about the composition of the committee, which are entirely uncalled for. The committee was appointed at the instance of the Medical Health Officer, who, through force of changing conditions in the plumbing industry, was compelled to bring the plumbing of this city up to the present modern standard adopted by other cities and towns.

### Committee Appointed.

To that end a committee of one architect (Mr. Burke), two members of City Council (Ald. Yeomans and May), one member of Builders' Exchange (Mr. Aldridge), Chief Plumbing Inspector Mr. Meadows, one master plumber (Mr. Maxwell), one journeyman plumber (Mr. R. Cunneyworth) and Dr. Hastings, M.H.O., was appointed. Therefore it is easily seen at a glance that the majority of the committee were not partisan by following the plumbing trade, but were selected on account of their broad scientific knowledge of the requirements of the city.

### Peculiar?

Now we come to a peculiar circumstance. We find the City Council ap-

pointing a committee on the approval of the M. H. O., and then the same aldermen, along with the press, passing opinions on such matters of importance which the committee, after serious deliberation, have come to as being desirable without even a glance at the existing conditions in the industry all over the civilized world.

### Prevails Elsewhere.

Every large city on the American continent to-day, and many infinitely smaller towns than Toronto, have all adopted the system of iron drains, because they have proved more desirable and effective than the tile drain; and without entering into a scientific discussion of the merits of the materials, we believe that even the uninitiated can readily understand that with the conditions of other cities and their advanced methods of sanitation, it would be much better to be guided by the results that the deliberations of the committee have found than the advice offered by men who have but little knowledge of modern sanitary conditions and are not qualified to pass disinterested judgment on the findings of the committee.

### In Public Interest.

As to casting reflections on the membership of the committee, we believe it bad grace, and no doubt those members of the committee who follow the plumbing trade based their finding on their knowledge of the weakness of the tile drain system. The committee have acted voluntarily in the interests of advanced sanitation, which is so much desired even in the city of Toronto, and have, in our opinion, acted in the best interests of the general public.—Local Union No. 46.



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## and Metal Worker of Canada

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T. B. COSTAIN } - - - *Editors*  
G. RUTLEDGE }

Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, NOVEMBER 1, 1912

Sometimes, even now, a sanitary and heating engineer will arise to ask, "What is the use of a local association? If I have learned something, by study, or through experience, why should I give others the benefit of this?"

**ASSOCIATIONS BRING PROFITS** An answer is given—one of the many possible answers—in a step taken some time ago by the Montreal Local Association. There the question of cost of doing business was taken up. Some members were shown that they had been estimating their cost of operations too lowly. As a result a higher and fairer margin of profit has been generally asked, and all have benefited. Undoubtedly the ones who were figuring too low have benefited, and the wiser ones have benefited also, since they are now free from the unwise competition of the others—unwise competition which kept them from getting jobs.

This inquiry was held quietly, with no sounding of trumpets. Other inquiries are arising from time to time which are equally beneficial. Hardly a meeting passes but some point of interest to all is brought out. Associations are a uniting power, and in unity there is strength. They are a clearing house for ideas, and in ideas there is profit for all.

On many sides are being heard complaints about the slowness of building work. Sanitary and heating engineers have undertaken to complete the operations for which they tendered by a certain date. This they are finding themselves utterly unable to do,

**AVOIDING FUTURE TROUBLE** for the simple reason that the general work on the buildings is not sufficiently advanced.

It has been a hard season for the builders, and so, naturally, for the master plumbers. Brick has been scarce. There has been a dearth of stone. Workmen have been moved about from one job to another, using up the material as it came to hand. Scores of jobs are behind. In many cases the roughing is only now being done.

The sanitary and heating engineers cannot, of course, be held responsible for delays in their work rendered necessary by the incompleteness of buildings. Nevertheless, there are unreasonable architects and owners. In view of the experience of this year it might be well, hereafter, for all taking contracts for plumbing and heating work, to specify that the building be ready for the commencement of their operations by a certain date, before they

bind themselves to have their work completed at a definite time.

### VALUABLE RECOMMENDATIONS.

A special committee, appointed by the Montreal city council, some year or more ago, to consider necessary changes in the building by-laws, has finally made one or two recommendations. The latest is of interest to those connected with Sanitary and Heating Engineering, dealing as it does with ventilation.

One of the recommendations is that no one shall live in a room which does not have a window providing fresh air ventilation—that is a window leading to the outside air.

Another clause states that all rooms which have not a window opening on the fresh air, shall be labeled "Not Habitable." The idea is that no system of inspection can prevent people living in rooms now constructed, which have not free ventilation—but that by placing such a sign in such rooms people will know that in sleeping there they are doing so at their own risk.

These two regulations have yet to come before the council for approval.

Metals on the primary market are rising again. Excelsior seems the cry.

There are three qualifications necessary for success in the retail business—capital, brains and honesty. And the greatest of these is honesty.

Price cutting in a time of prosperity is an unnecessary step to acquire a class of business which is not, after all, exactly desirable. And it is just about as bad at any other time.

The American presidential elections are drawing to a close without any evidence yet of the campaign having had a detrimental effect on business. Another bogey banished.

A Frenchman has invented unbreakable glass. Where will the next generation's supply of baseball pitchers come from when they keep eliminating the sources of practice of the young fry?

# Figuring the Cost of Doing Business

Local Association Takes Steps to Ascertain the Exact Percentage that Should Be Charged—Why So Many Sanitary Engineers Fail to Make Money—Case Cited Where Man Reckoned Expenses at Six Per Cent.

EVERY little while there comes a question as to profit, whether a man doing business at a certain advance over the cost of material and labor is really making or losing money. In a good many cases, it would seem, there is an actual loss and not a gain. For instance, take a case which was just brought out at a meeting of a local association. A conversation had been going on dealing with men doing business at too low a margin. "Why," said one of those present, "the closest I ever figure is ten per cent. I'm doing some work now at ten per cent."

"Then," remarked another man present, "you are losing money."

And there can be little doubt that the man was. He was taking his cost of labor for the job, adding to it the cost of material used. Then was adding the ten per cent. for profit. It seemed all right, but he was overlooking any allowance for general business expenses. That job, as all others, should have borne a part of his overhead expenses, and he was not asking it to do this. He was losing, not making; losing just the difference between that 10 per cent. supposed profit and his cost of doing business, probably about 18 per cent.—or 8 per cent. loss.

## Investigation Held.

To determine what is the cost of running a plumbing and heating business, and to arrive at some idea as to the advance which should be struck to give a fair profit, the Montreal Master Plumbers Association recently made an investigation. The members brought in estimates of their cost of doing business. These were enlightening. They were widely different, and in figuring out why the difference existed much interesting and valuable information was brought out.

The difference in the estimate of the members was truly remarkable. One man figured that his cost of doing business was only 6 per cent. Another figured that it cost him 32 per cent. of his turnover to keep things going properly. These were the high and low estimates. Perhaps it will be sufficient to consider how these figures were reached, and where, if at all, the mistakes in estimating had been made.

## Where Mistake Was Made.

Take the man with the low estimate first. He owned his shop—therefore he did not charge rent as a cost of operating. He gave himself a salary of \$1,000

holding this was enough as he had a side line which brought him in a good sum. He simply charged this small salary, the salary he gave his bookkeeper, his heat, light and taxes—these made up his expenses of operation, and it was these which amounted to but 6 per cent. of his turnover.

It did not take the assembled plumbers and steamfitters long to make this man see where he had been deceiving himself.

"Why, you could have rented that store for \$1,500 at least to someone else," remarked one of those present. "If you did not make it earn that much for you you were robbing yourself. You should have charged that \$1,500 in as an expense of doing business."

## Profits After Salary.

"And," added another member present, "you could get at least \$1,800 for managing some other man's business. You are worth as much to yourself as you are to another man. You should have given yourself at least an \$1,800 salary as an expense of upkeep. Profits on your business come after you have paid your own salary as well as your bookkeeper's."

This man saw the point—decided his figuring had been shortsighted and improper. He did some fresh penciling and determined that his cost of operating was nearer the 20 per cent. mark than the six.

With the other man it was different. He had reached his cost of 32 per cent. only after careful and wise figuring. His percentage was high, not because he was making improper or exorbitant charges against his business, but because he deliberately kept his turnover down.

This man gave himself a salary of \$2,000. He had received as much for his services, and felt he owed himself so much for the work he did for himself. He charged in his rent, his taxes, his lighting and heating, his bookkeeper's salary, his delivery. The men's wages he did not charge, as he estimated these against each job. Then he took only those jobs upon which he felt he could get a fair profit. As the result his turnover was smaller than some, and consequently his cost of doing business, though not totalling more than did many other sanitary and heating engineers, yet amounted to 32 per cent. of his turnover.

Like the other man, so this member of the association saw why his figures dif-

fered from so many others. But unlike the other man, he did not see any reason for changing. As he argued, "I would rather have a high cost of doing business than reduce this cost by doing a lot of business for fun. I can make more money by doing less and doing it all at a good profit."

## Average Cost 17½ Per Cent.

There is something to ponder there. Certainly this man's contention was not altogether wrong.

But after a thorough discussion it was estimated that the average cost of doing business would be about 17½ per cent. That is a man would have to add 17½ per cent. to his cost of materials and labor on each job before he was clearing himself. By way of making estimating easy, therefore, the association determined that a man figuring on a job would be about right if he determined the cost—that is of labor and material—added 10 per cent. to this, for a fair profit, then 20 per cent. to that by way of covering the cost of doing business. Or more simply it was estimated that adding one-third to the cost of labor and material would provide for a fair profit. A number have been following this plan, and have found that it is one which gives pretty general satisfaction.

But when it comes to figuring on a job this cost of labor is a serious problem. There is a tendency to deceive one's self. A man is anxious to get a job. He therefore takes an optimistic view of the labor question. He figures as if everything is bound to go right, rather than allowing for certain reverses which are almost certain to arise and cause delays.

One master plumber gives an instance of just this kind of thing. "I have been installing heating appliances for a good while," he says. "I have found that it takes about a day and a half, for a journeyman and a helper, to install each radiator. Sometimes I have thought that a day and a quarter would be a sufficient allowance. I have wanted the job and have estimated upon that basis. Almost without exception I have found that I have been wrong—that I was losing just that much on the charge for labor."

There can be very little doubt that the cost of the labor is more likely to be more than less than was estimated. It is wise to make a fairly liberal allowance, always, of course, bearing in mind that the contract is wanted, and that this goes almost certainly to the lowest tenderer.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## WATER FRONT AND GAS HEATER CONNECTION.

Editor Plumber and Steamfitter.—I have a gas heater to heat the water of

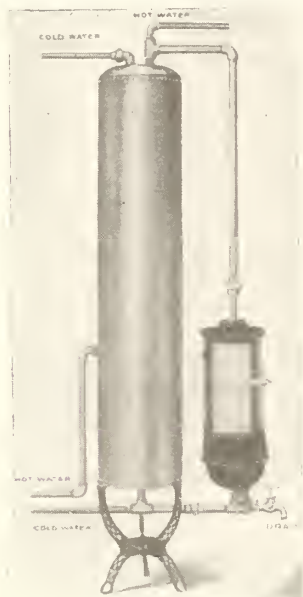


Fig. 1.

a range boiler and also wish to connect the boiler so that it can be heated at times from the water front. Will you kindly illustrate the manner in which this can be done in the next copy of the paper?—J. H. Murphy.

In Figure 1 we show the manner in which this can be done and we believe that it is so plain that further comment on our part is unnecessary.—D. C. H.

## A MAIL ORDER HOUSE BATH TUB.

Editor Plumber and Steamfitter.—I clipped the enclosed cut from a mail or-

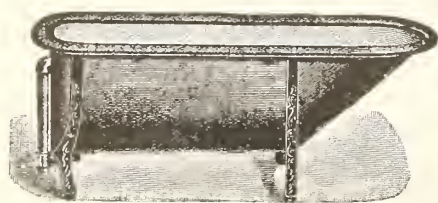


Fig. 2.

der house catalogue and wish to state that the price put on it is the great sum of \$5.50 for an enameled steel bath tub

4 ft. 6 in. long. It says that it is coated with enamel on the inside and nicely painted on the outside and then goes as equipped with an overflow and Fuller bath cock but (and here is where these "dern" mail order houses catch the suckers,) **these are not included in our price.** It also states that it is best not to let in "extremely hot water into the tub at first." That would knock the enamel (?) higher than "Gilroy's" kite you see. This is a fair sample of how the public is hoodwinked.—John Smith.

## AMOUNT OF HEATING SURFACE.

Editor Plumber and Steamfitter.—I guess that the answer to the question I have to ask has been published before, but I wish that you would give me the amount of heating surface there is on pipes up to 2 in.—Apprentice.

A 2-in. pipe 20 in. long equals 1 sq. ft. of heating surface.

A 1½-in. pipe 24 in. long equals 1 sq. ft. of heating surface.

A 1¼-in. pipe 28 in. long equals 1 sq. ft. of heating surface.

A 1-in. pipe 36 in. long equals 1 sq. ft. of heating surface.

## A FIRST-CLASS SMUDGE.

Editor Plumber and Steamfitter.—Would you kindly publish the name of some first-class smudge that will not burn off easily. Also is wiping metal composed of equal parts lead and tin? And oblige.—Improver.

Use half an ounce of glue dissolved in water. Stir in slowly about a pint of lampblack making the mixture about as thick as cream reasonably thick. Now boil until they are mixed thoroughly. You can test by doping some on the pipe. If it comes off easily add more glue. Wiping solder is made of two parts tin to three parts lead. When mixed, if it looks very bright there is too much tin and is too fine. When you wipe a joint be sure and keep the solder stirred so that the metals are mixed.—D. C. H.

## GOOD BOOKS ON HEATING.

Editor Plumber and Steamfitter.—Will you kindly tell me through the Plumber and Steamfitter a good book on

steam and vacuum heating and the name of the author. Being a subscriber of the Plumber and Steamfitter am interested.—W. C. B.

We would advise you to consult the list of books we publish in the paper. Probably the ones that would meet your needs would be: "American Steam and Hot Water Heating Practice," "House Heating by Steam and Hot Water" and "Notes on Heating and Ventilation." From these books you should get a very accurate degree of information and you will find their prices quoted in the list that we publish every issue of the paper. We shall be pleased to send them upon receipt of the prices given.—D. C. H.

## WANTS MORE OPENINGS IN THE FITTINGS.

Editor Plumber and Steamfitter.—Do you know if there are any fittings made for plumbing work where there are openings made on the run and the whole fitting resembles the general form of an "ell"?—M. M. X.

We believe that the gentleman has in mind fittings something like the ones we show in Figure 3. These are made by



Fig. 3.

certain firms and if the party cares to write us, we will furnish the names of the firms.—D. C. H.

## WHITE LEAD ON THE FITTINGS.

Editor, Plumber and Steamfitter.—I see that in some former issues of the paper you have preached against the use of white lead on steam or hot water fittings. Now I want to give you an instance of how the thing worked out in my house the other day. A man called to put on a new kind of gas light in the kitchen where I was ironing. The gas light had been put together with white lead and he had only a small pair of pinchers with which to do the work. He pried and twisted the pipe until he at last broke it off and all the gas came



pouring out into the kitchen. I fortunately had sense enough to jump and turn off the fire, but at that the room was filled with gas before he could get to the cellar and turn it off. Then he had to go several miles to the shop and get some tools and some more pipe and it was late in the afternoon before he got things all straightened out. Now if the pipe had been put together with some kind of oil, or graphite, all of this trouble would have been avoided.

H. R. Jameson.

#### TAKING MEASUREMENTS.

Editor Plumber and Steamfitter.—Would you be as kind as to show me a simple method of taking the measurements of 45-degree elbows and different fittings generally used in Durham work in your next issue of Plumber and Steamfitter, and oblige, yours truly.—A. W. M.

Multiply the distance between the centers (or what you possibly may call "the offset") by 1.414.

This will hold good on long or short offsets.

On a 60-degree bend use 1.15 to multiply with.

On a 30-degree bend use 2 to multiply with.

#### AMOUNT OF WATER FOR THE HOME.

Editor, Plumber and Steamfitter.—It would be mighty handy for me sometimes if I knew about how much water it took for the average bath room. Can you give me any figures on the subject?

X. Y. Z.

It would depend upon the climate, the locality and also the nationality of the people using the bath room. We believe that it is generally customary to estimate that, in average cases, the amount used will be about twenty-five gallons per person every day. The water commissioner might help you in case he would give you access to any of his records.—D. C. H.

#### HEATING WATER IN TANK.

Editor, Plumber and Steamfitter.—I have a certain tank that I want to heat the water in. Would you advise me to let the live steam into it directly, or use some other way?

"47."

If the tank you have is one that is open and the party for whom you are doing the work has no objection to the amount of noise that will arise every time that one lets the steam into the tank, why, use the live steam let directly into the water from the open end of the pipe.

If there is an objection, we think that you had better write your jobber for a

patented steam nozzle that will accomplish the purpose without so much noise.—D. C. H.

#### KEEPING PLASTER OF PARIS SOFT.

Editor, Plumber and Steamfitter.—Is there anything that can be put into plaster of Paris that will keep it from setting as quickly as it does?

Helper.

To each quart of water that you use in mixing up the plaster of Paris add a small teaspoonful of ordinary cooking soda. Vinegar will also keep the plaster of Paris from setting so soon. The more vinegar used the longer time it will take the plaster to set. Ordinarily the plaster is not mixed correctly. It should be sifted into the water instead of pouring the water upon the plaster as is generally done, as in this way of mixing one does not admit so much air and thus set the plaster too fast.—D. C. H.

#### REGISTER IN SIDE WALL.

Editor Plumber and Steamfitter.—I have several indirect radiators to set

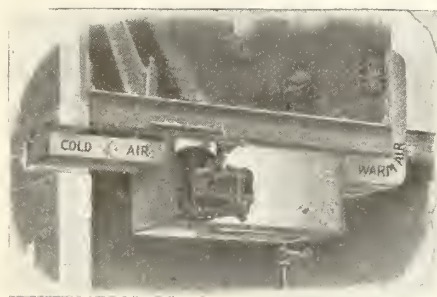


Fig. 4.

and wish to put the registers in the side wall instead of the floor. Will you kindly show me a good way to do it?—P. J. Miles.

In Figure 4 we illustrate just how this may be accomplished, the cut fully showing the manner in which the job is done. Of course the radiator can be enclosed in wood if it is deemed more to your advantage.—D. C. H.

#### PRESSURE ON AIR SYSTEM.

Editor, Plumber and Steamfitter.—Will you tell me if the pressure that they get on an air pressure system of waterworks is reliable and will it do the work?

J. J. Hughson.

We can state that on the jobs we have had the chance to see the pressure seemed to be steady and to accomplish the purpose satisfactorily. We can state, however, that the job will have to be airtight in order that the system work to advantage. A great many plumbers will leave such a job with a very small leak and, of course, the pressure will very

gradually work off, unless there is an automatic pump that starts when the pressure falls below a certain point. These systems have been on the market for some time and seem to do all that is claimed for them and we believe that you should have no hesitation in installing one if you have the occasion.—D. C. H.

#### WHY IS CIRCULATING PIPE BETTER?

Editor Plumber and Steamfitter.—I see a great deal in the trade papers about the circulating pipe on a plumbing job. Now you will be doing me a great favor if you will tell me in a few words just why this pipe is of advantage over the ordinary manner of installing the work.—G. J. S.

When the work is put in according to the old-fashioned way there is a long line of single pipe leading to the fixtures that lies full of cold water all the while. Now in order to get the hot water, this cold water in the pipe must be first drawn off. This water amounts to something in the course of a year's time, and where the water is metered the customer's bill is too large, not to mention the inconvenience. We have observed jobs where one could draw cold water for at least three minutes before even the lukewarm water came. By the use of a circulating pipe, hot water can be drawn from the faucet almost instantly whenever there is a fire in the stove for any length of time.—D. C. H.

#### THE "PITCH" OF PIPES.

Editor Plumber and Steamfitter.—Is it true that, in installing a hot water job all the main pipes and branches must be put on a pitch upward from the boiler? I had a fitter working for me once that claimed that the jobs would work if the mains were pitched away from the boiler just the same as one would do on a steam job. Please answer right away.—"Old Man."

We believe that the usual practice is to have the mains and branches on a hot water job on an up grade from the boiler on the theory that the natural flow of hot water is in an upward direction. However, we can state that we have seen hot water jobs that worked perfectly where all of the mains were pitched downward from the boiler. In such cases the expansion tank was located unusually high so that there was a good pressure, or else a pressure regulator was connected to the job. We would not recommend that this plan be tried on too large a job nor by anybody who was not fully acquainted with about all of the crooks and turns that there are to hot water heating.—D. C. H.

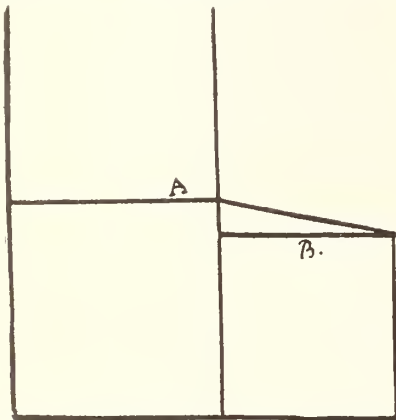


# Ground Plan Only Proves Not Enough

Montreal Sanitary and Heating Engineer Loses Money on Job Because of a Difference in Floor Level, Not Shown on the Plan He Was Given—Many More Feet of Pipe Thus Required, and Much More Work.

Experience is undoubtedly the best teacher, but the fees come high. Therefore, it becomes advisable for men to profit by the experience of others. A man may make a mistake through no fault of his own, but that same mistake repeated, becomes foolishness. Moreover a man who has heard of a difficulty into which a fellow craftsman has fallen is not a wise man unless he notes the circumstances and resolves that he will profit by the misfortune of his brother.

A case has arisen in Montreal which shows very clearly a point which sanitary and heating engineers will need to guard against. The mistake made here has cost the man who thought himself fortunate to get the contract, more than fifty dollars; yet he was misled in a way which might have happened to almost any other tenderer. Indeed the full story shows that others had tendered upon the same understanding as he.



Section plan—(A) Level of hall; (B) Level of new room.

## Changes Required.

To get right to the point, the whole difficulty in this case, arose from the tender being made upon a floor plan, no section plan being shown at all. Usually this would be quite all right, but as things turned out, not in this case.

The work for which tenders were called was required by reason of an addition made to a house. At the back there had been a kitchen, but the owner decided to have a spare room built above this, and had plans for the work prepared. In the spare room there was to be a water basin, with cold and hot water attachments, and under the window was to be placed a radiator to provide for proper heating. Nor were these changes all. The room was thrown out at the back of the house. The door was

made through a hall, at the end of which had formerly been a closet containing the w.c. This, of course, necessitated the removal of the w.c. to the bathroom, which was just to one side.

## What Seemed Necessary.

It all seemed simple. The sanitary engineer decided he would merely have to move the closet around from position A to B, as shown in the accompanying design. From this he thought he could make the necessary connection for the water basin. The radiator, he judged, would cause little trouble. As shown in the plan, there had, before the alterations were made, been a radiator at the end of the hall, where the entrance to the new room now is. It appeared that all which would be necessary would be to extend the existing main to that window, and make the connection with the new radiator there.

So the problem shaped up at first, and upon this understanding the figures were prepared, the sanitary and heating engineer agreeing to do the work for the sum of \$90. The tender was awarded to him, and then the troubles began.

Only the ground plan had been examined it must be remembered. Now when the men went to work they found conditions very different to what they had expected. The tender had been made upon the supposition that the new room would be run off on the same level with the rest of the second story. This, however, was found not to be the case. The kitchen, upon which it was built, had been equipped with a slanting roof. The top of this started from the level of the second story. The foundation for the floor of the new room, therefore, was two feet below the main second storey. That room had to be reached by steps.

## All Plans Upset.

It is not hard to realize just what this meant. Why it upset practically all the calculations. It turned that job into a money loser and not a money maker.

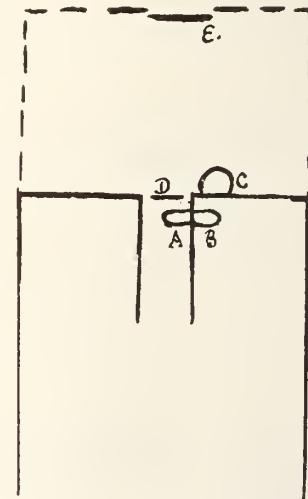
Just consider the main difficulty a moment. The radiator, according to specifications, had to be placed under the window at the back of the new room. As has been said the original intention was to run the main which served the second floor out to serve this new radiator. But with that foot drop, this of course was impossible.

As soon as the sanitary and heating engineer realized the position in which he was placed he went to the architect; explained how he had not seen a sec-

tional plan; and suggested that the radiator be put upon the side wall instead of beneath the window. To this the architect would not consent, though he agreed the heating would be just as satisfactory with this arrangement. He demanded his pound of flesh. As a result the work required the installation of 140 feet of pipe instead of 35 as had been estimated. A new main had to be run to the boiler for that new radiator.

## The Moral.

There were other difficulties. The Y, which had been expected to supply the wash basin, had to be changed. Indeed the work, which it had been estimated would take about four days, took eight. The loss of time alone was exceedingly unfortunate at a season when work is piling up and men are none too plentiful.



Ground Plan.—(A) Old position of w.c.; (B) new position; (C) required wash basin; (D) old position of radiator; (E) required radiator.

Of course there is a moral to the incident—a moral that is so obvious it need hardly be mentioned. A ground plan, given by an architect whom a sanitary engineer does not know to be perfectly scrupulous, is not enough. When the question of changing the size of the radiator came up in the case which has just been explained, it developed that others had tendered around the \$90 mark. Others, therefore, must have been taking that ground plan as sufficient. And usually it would be, but in dealing with a man who may be anxious to take an unfair advantage, it is best to make sure.

### MEN ARE SCARCE.

"Send us along a dozen more men and we may be in a position to get time to think of such things," was the reply met with when the writer entered one of the largest plumbing and steamfitting contractor's offices in Toronto, in quest for information. The general complaint is that men are scarce. No foreman speaks of the amount of work as being too great—it is always the number of men that is too small. But surely the two go together. This year owing to the very great amount of buildings, plumbers and steamfitters have been more rushed than usual. There has been more work to be done, and as men cannot be made plumbers in a day, the scarcity of men has been felt more than in former seasons.

As a result of this scarcity, and the difficulty and time necessarily spent in initiating men into the trade, many little devices have been resorted to by managers and foremen to "steal men." Quite often more money is made the drawing card. And the manager who has taken time to train new men finds that just at the time when these men are beginning to be of some service to him, he loses them because some one of his opponents has offered a few cents more per hour than he had been paying.



The Thos. A. Norris Co., Toronto, have secured the contract for the heating of All Saints' church. They are installing two Spencer boilers.



### TANK PRESSURE AND CIRCULATING PIPE.

Editor Plumber and Steamfitter.—I am going to install a plumbing job and it will be necessary to put a supply tank in the attic. Now can I put a circulating pipe on the hot water line so that they can draw hot water sooner than if put in according to the usual manner?—John Crowley.

The matter of circulation applies to the tank pressure as well as to where the pressure comes from the city waterworks. You can make just as satisfactory a job with the tank pressure as you can with the other.—D. C. H.

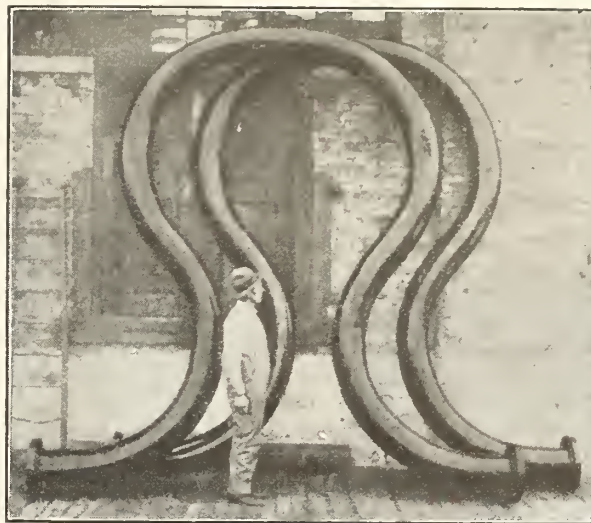


### LARGE "N" PIPE BENDS FOR LETHBRIDGE.

THE illustration shows two "N" bends each containing 34 feet of 10-inch full weight pipe, made for the City of Lethbridge, Alberta, and order-

ed through the Winnipeg, Manitoba, branch of Crane Co. (Crane & Ordway Co.) These bends measure 11 feet, 10 inches, face to face, and 10 feet, 11 inches, centre to centre in height. They have a 3-foot, 2-inch radius with four 10 by 17½ extra heavy No. 295 E. welded flanges, F and D. The weight of each bend is 1,570 pounds.

The bends are part of the main steam piping in the Lethbridge power plant. One bend is in a vertical position, supported from the roof truss; the other lies horizontally, supported from "I" beams in the fan gallery. The working steam pressure of the line is 160 pounds, with superheat of 130 degrees. The engineer of the plant preferred to take care of expansion with these large "N"



shaped bends rather than with sliding expansion joints. The specifications called for piping having a tensile strength of 58,000 pounds to the square inch, an elastic limit of 34,000 pounds per square inch, elongation of 22 per cent. in 8 inches, and a reduction in area of 55 per cent. Owing to the large size of the bends they had to be welded at the top of the bend, there being about a foot of straight pipe at that point.



### Will Prepare Plans.

Toronto, Ont. — Recommendations of the Property Committee took up most of the time of the Board of Education at its meeting last night. Trustees Ellis and Levee led an attack on the proposal to have C. J. Doughty, Inspector of Plumbing, Heating and Ventilating in the Building Department, prepare the plans and specifications for heating, ventilating and plumbing in the new Pauline avenue school building. They claimed that outside engineering experts should prepare these plans, as in the past. On

a tie vote the motion to refer the question back was lost, and by seven to five the committee's recommendation subsequently carried.

### Given Traveling Bag.

Toronto, Ont.—W. H. Meadows, head of the plumbing inspection branch of the Medical Health Office, was yesterday presented by his associates with a handsome traveling bag, the occasion being the twenty-fifth anniversary of the commencement of his service in the department. Dr. Hastings made the presentation, and Mr. Meadows replied in suitable terms.

### S. Snape Killed.

Toronto, Ont. — Samuel Snape, a steamfitter, who lived at 59 Jerome St., was killed this morning at the new build-

ing of the General Fire Extinguisher Co., in Dundas street, near Conduit St., West Toronto, when he was buried by the collapse of a trench in which he was working. The man was buried half an hour or so before the accident was discovered, and when he was dug out life was extinct. Snape was working alone in the trench which is outside the building, making a connection in a large pipe. The trench ran through soft, yellow sand and was about five feet deep. It was when one of his mates went to ask him a question that it was found the ditch had caved in. Snape was nowhere to be seen, and an alarm was raised. Dr. J. J. Matheson, who lives nearly opposite, was called, and the body was soon uncovered. The doctor worked hard over him for three-quarters of an hour, but to no avail, and the body was taken to Speers' undertaking parlors. Later it was removed to the morgue.



Adam Clark, of Hamilton, has secured the contract for St. Giles church heating and is putting in Spencer boilers.



# Tips for Helpers---By "Phoenix"

## Chapter 8.

One of the most disagreeable tasks of a heating job is getting the radiators from wherever they happen to be left each to its proper place on the job. Generally, it is done with such a "burrah" that somebody is sure to get pinched or smashed up.

That is, it was so when I worked at the business several years ago, as helper. About the only way we had then to tackle this problem was to just go at it and take up the radiator and put it to its place by main force. Now on the radiator shown in Figure 2 on this page; it would take at least four very husky men to carry it on the level. Going up or down stairs, six would be necessary



Figure 1:

and as it was almost impossible to get that number at the shop it was a case of going out on the street and picking the help up and few of that kind were much good on a long heavy carry.

Of course in some cities the matter of shifting the radiators to their place is taken care of entirely by a trucking firm and the steamfitter never has to put his hand to them in this case. This is a very good plan if the boss cares anything at all about saving his fitters for the work. I know that when I was a fitter and had a hard day's work ahead of handling the radiators, I never figured that I would be very much good for work the next day and I was not a light weight either.

The radiator truck shown, or any that answers the same purpose is a mighty handy and labor-saving piece of apparatus to have around. Such a contrivance

will save its cost several times over on the first two jobs done, not to mention the danger that it does away with. On a certain big job way down in "Dixie land" that I was on a few years ago, two men handled all of the radiators for about ten steamfitters and kept them going at that. When I say that there were something over 600 radiators you can well understand that there was something to do. There were elevators in the building at the time and the men, with the trucks had no trouble at all in keeping up with the work. There was a fellow down there who claimed that he was a fitter. I guess that he meant a sprinkler fitter for he sure did not know much about our line of work, other than to cut threads on pipe and most any one can do that at the first shot. Well, this fellow simply couldn't get his radiators correctly centered on the windows. Invariably they would be from one to four inches out of whack. So I showed him how to do it without any figuring at all, so to speak. Had him get a piece of string and take one end in the left hand, the other end in the right hand and approach the window and place each hand in the corner of the window so as to get the extent of the sill. Now, then, I had him double the string and then measure that distance off on the sill. He then had the exact centre of the window. Then I had him do the same thing to the radiator and when he had the two centres all he had to do was to line up these centres and the job was all right. He never got any wrong after that.

It isn't any trick at all if you only go at it right and you don't need to figure any at all, that is, if you have got the radiators on the job. Of course, if you have not, why that is a different story.

Another thing that we had to do on that southern job was to cut in on some large steam mains that ran to the boiler house and splice in for our supply for the building that we were working in. Now it was on this work that the tool shown in Figure 2 came in mighty handy. It wasn't this same fellow who did the job, but one that looked something like him. I know that we never took any of the pipe out of the ditch and also that the fitter was not a very long time in doing the work. Also that it saved the old man quite a bit by being able to do the job just as he did.

Now the radiators on a job can be left

swung out into the room, if you want to bronze the side towards the wall, or that side can be touched up first before the radiator is set. In setting the radiator a great many fitters always get all "balled up" about the measurements and when time to hook up comes, why someone else has to make it right, perhaps. Now this is not so very bad, on a one pipe job (unless the fellow has got the stub too near the wall); but on a job where the radiator has a return you all know that the measurements have got to come within half an inch at the most of being correct.

It does seem to me that the fitter should come as near as the half inch mentioned, but many of them never do. Now the fellow has either a radiator book, or the knowledge in his head, or the valve itself to go to and the same information as to the radiator. He gets

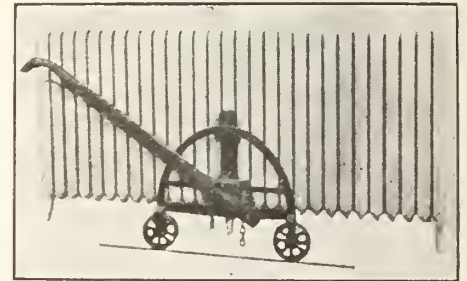


Figure 2.

lost I guess and just drifts along letting it go any old way.

There is another consideration right here, though, and that is the carpenter. Many times when the fitter has done his work entirely correct and left the stubs in the right place, when he comes to make good the connection he finds that some son of a gun of a carpenter has come along and deliberately driven the stub out of the way and that it is from one to four inches off the true measure. I never saw a carpenter yet who would not do this trick if the stub was in the way and would make him saw a board or two.

So, after a few experiences of this kind and when I had got good enough at the business so that I could measure and be sure that the radiator and valve would come right as I laid it out, I always used to anchor my steam or hot water stubs just where I wanted them to

(Continued on page 18.)



# The Time Required to Heat a Radiator

James A. Donnelly Explains a Method of Figuring on the Basis of Limiting the Heat Supply to That Required When Room Temperature is at 70.

**F**URTHER calculations of the time element in heating apparatus were brought out at the recent meeting of the Heating Engineers' Society in a paper by James A. Donnelly.

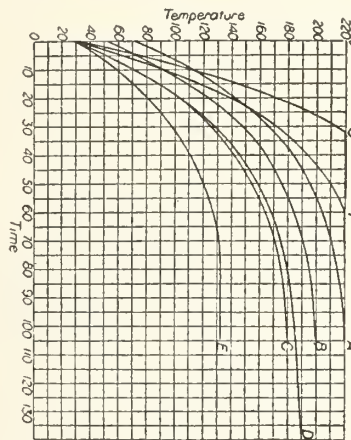
In reviewing the subject Mr. Donnelly stated that the time element of a heating apparatus as a whole may be defined as the time elapsing from the initial firing of a plant at any given outside temperature to the moment when the temperature of the building has been raised to that for which the apparatus was designed. An analysis of the subject might be divided into a consideration of the time required to heat a radiator or other part of an apparatus which has been shut off and allowed to cool (the time required to heat up the piping, radiators, etc., after the fire has been banked over night); and also a consideration of the comparative time required in bringing a steam, hot water or hot air apparatus to its maximum temperature. The time element may also be considered in the light of the cooling curve of the apparatus or the building. In all calculations of this character, the higher mathematics give exact results, but for an easy understanding of the subject approximate calculations will be considered sufficient for all practical purposes.

Calculating the time necessary to heat an individual radiator can best be done by considering one in which the maximum opening of the supply valve is supposed or intended to be just sufficient for the normal heating of the radiator at the pressure designed when the room is 70 degs. With this opening and under the given pressure, no steam is supposed to pass to the return, but only water of condensation. Assuming the average cast-iron radiator to weigh 7 lbs. per square foot of surface and the specific heat of the iron being 0.13, it will take  $7 \times 0.13 \times 150 = 136.5$  B.t.u. to raise the temperature of the radiator from 70 degs. to 220 degs. If the radiator gives off 250 B.t.u. per square foot per hour when fully heated, or 4.1 B.t.u. per minute, the mean emission from the radiator per minute during the time of heating the radiator (starting at 70 degs) will be one-half the amount, or 2.05 B.t.u. per minute. Thus, while the supply of heat to the radiator is at the rate of 4.1 B.t.u. per minute, 2.05 B.t.u. on the average are emitted to the air, leaving the remainder, or 2.05 B.t.u., to serve for bringing the iron up to temperature.

In the instance cited it will accordingly take  $136.5 \div 2.05 = 66\frac{1}{2}$  minutes to heat the radiator. In other words, if we divide the number of heat units required

to heat the metal of a radiator by the supply of heat available per minute for the purpose, the quotient is the number of minutes required for the operation. The available supply per minute is the number of heat units represented in a minute's supply of steam diminished by the mean number of heat units transmitted through the outside of the radiator to the air. If we let  $I$  represent the amount of heat required to heat the radiator and  $R$  the amount of heat brought to the radiator per minute and  $E$  the mean amount emitted per minute, then the number of minutes required to bring the radiator to temperature,  $M$ , is equal to  $I \div (R - E)$ .

The foregoing brief analysis is rather too approximate, as the rate of heat emission is not constant for a wide range of temperature differences. For example,



Time in minutes required to heat a cold radiator.

when the mean temperature difference between the air and the metal of the radiator is, say, 10 degs., the heat emitted, according to tables available on the subject is 0.55 B.t.u. per degree per square foot hourly, while if the difference is as much as 150 degs., the coefficient is no less than 1.64 B.t.u. per square foot per degree per hour. Accordingly, we may make a more extended analysis for the same conditions and find that, as a matter of fact, it will take hours for the radiator to get up steam temperature, depending on how quickly the air surrounding the radiator becomes warm.

Indeed, if conditions were such that the air outside the radiator remained at some low temperature, say 30 degs., the radiator would never fully come up to temperature, assuming, of course, that it is supplied with no more than the normal amount of steam it is expected to condense with the ambient air at 70 degs.

Suppose the radiator is located in a room with the air at 30 degs., and the steam is then turned on at the rate to supply the so-called normal amount, namely that equivalent to about 250 B.t.u. per square foot per hour. Then for every minute that the radiator is in operation it receives 4.1 B.t.u. Suppose that the radiator has become warmed to 50 degs., and the temperature of the air has not been measurably increased. The mean difference in temperature between the radiator and the air is 10 degs. As the transmission of heat to the air for this temperature difference is about 0.55 B.t.u. per hour for the entire time that the radiator is in operation under this average temperature difference, the radiator loses to the difference between the heat supplied and the heat given to the air is therefore for every minute  $4.1 - 0.09 = 4.01$  B.t.u.

As the radiator has in the meantime been warmed to 50 degs., this difference of heat has been stored in the radiator and is equal to  $7 \times 0.13 \times 20 = 18.2$  B.t.u. As the amount of heat available for storage in the radiator is 4.01 for each minute, it is obvious that the number of minutes required to warm the radiator is  $18.2 \div 4.01 = 4.54$  minutes.

In the same way we can imagine the radiator warmed from 50 degs. to 70 degs. We can then assume that the air has by this time reached 31 degs. The mean temperature then between the radiator and the air is roughly 29.5 degs. From tables of heat transmission from radiators we can assume a value of 1.18 B.t.u. per degree per square foot per hour for the transmission, and, proceeding as before, we ascertain that the number of minutes required to warm the radiator from 50 degs. to 70 degs. is  $18.2 \div (4.1 - 29.5 \times 1.18 \div 60) = 5.17$ .

By taking successive steps and allowing for a gradual increase in the surrounding air, successive values of the time interval may be calculated. For example, we may assume that by the time the radiator has reached 150 degs. in temperature the air is 35 degs., and then that each square foot of the radiator or a given square foot of the radiator is warmed to 170 degs., with an increase in air temperature of 36 degs. Here with a mean temperature difference of about 124.5 degs., and a corresponding coefficient of heat emission of 1.55 B.t.u. the number of minutes works out to be 20.7. So long as the difference in temperature between the radiator and the air is less than 150 degs., which difference is that for assumed normal opera-



tion, the radiator can continue to warm up toward steam temperature.

While extended figuring along these lines is of no importance per se, it goes far to show how important a factor the initial warming of a heating apparatus may be. For example, pursuing the figures but a step further, they indicate that even allowing the air to take on 4 degs. (from 36 degs. to 40 degs., in other words) while warming the radiator from 170 degs. to 190 degs., the time required to accomplish this increase figures out at 70 minutes, so great is the amount of heat constantly going into the air from the radiator in relation to the total amount supplied in the same time.

To bring out the point a little more clearly, accompanying curves are presented. Curves A, B and C show the time required to warm the radiator when it is started at a temperature of 70 degs., 50 degs. and 30 degs., respectively, the air remaining at these temperatures. They would indicate that instead of the radiator reaching the steam temperature in an atmosphere of 70 degs., within shortly over 60 minutes after turning on the steam, as the first rough calculation showed it would take over 100 minutes. Curve B shows that with the air remaining at 50 degs., the temperature would not pass 200 degs., on the average, the difference between the air and the radiator being the 150 degs. mentioned. All the iron would be heated to a temperature which would correspond to an average of 150 degs. Curve C indicates in a similar way that the air remaining at 30 degs., the radiator would not pass 180 degs.

Curve D is one allowing for a gradual increase in the air temperature. In this particular case it is the curve for the heating up of a radiator starting at 30 degs., and allowing for a gradual warming of the surrounding air. It will lie to a greater or less extent above Curve C., according to the rapidity with which the surrounding air is itself warmed. It will continue on the upward rise until, of course, the radiator assumes steam temperature. Curve E corresponds to curves A, B, and C and is for a hot water radiator starting at 30 degs., in an atmosphere remaining at that temperature and allowing for 100 degs. between the air and the radiator temperature under normal conditions. Curve F is drawn for a steam radiator started at 30 degs., with the air remaining at 30 degs., but the steam supply one-half again greater than the normal supply. Curve G corresponds to the conditions of curve F, except that the steam supply is double the normal.

E. A. May: The author states that with the 2 lbs. steam pressure in the radiator, the temperature of the iron in the radiator was 220 degs. The conduc-

tion of iron is well-known and if the radiator, under these condition, emitted 250 B.t.u. per square foot per hour, it would mean a temperature difference between the two faces of the radiator of only 0.6. It is well-known, too, that the temperature of the iron in a radiator does not approximate the temperature of the steam, otherwise there would be no transmission of heat from one to the other. The outside wall of a radiator is, by actual measurement, but little higher in temperature than the surrounding air. I should like to know by what means the author obtained the temperature of the inside wall of the radiator. In most testing methods it has been a difficult matter to measure this.

Mr. Donnelly: If Mr. May has those data available, that the outside wall of a radiator is but little higher in temperature than the surrounding air, I would say that this fact has escaped me thus far.

Mr. May:—The government has published a brochure on the conduction of heat through the walls of a firebox, containing reports of a series of experiments showing a very rapid drop in temperature. I do not think that with 2 lbs. gauge pressure in a radiator, the temperature of the walls will be 220 degs.

Mr. Donnelly: In my experiments, I took a radiator and gave it a steam supply to bring it up to the desired temperature and then caught the condensation. It figured 0.13 as the specific heat of the iron. I had no way of getting the temperature of the radiator except by the condensation, but either 0.13 is incorrect as the specific heat of iron or the entire iron in the radiator does come very close to the steam temperature.

D. M. Quay: I do not think it is possible to have the outside of a radiator the same temperature as the inside, especially with a cast-iron radiator, until you get the temperature of the room up to the temperature of the steam inside the radiator, which is scarcely possible. I think you will find that the outside wall of a radiator is nearer the temperature of the surrounding air close to the radiator than to the steam in the radiator. It might be possible with very thin sheet metal or some similar material to have the outside wall of the radiator nearly the same temperature as the inside wall. It is claimed that the temperature of the water of condensation in the radiator is from 7 degs. to 10 degs. lower than the steam entering the radiator.

Mr. Donnelly: In all radiator tests the temperature of the room, 70 degs., subtracted from the temperature of the steam, or 220 degs., gives us 150 degs. difference. This transmission is given in all the tables of transmission as B.

t.u. transferred per hour per degree, and the total B.t.u. conducted from the radiator is then divided by 150. Now, it is true that the outside of a radiator is only 70 degs. or 80 degs.

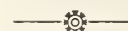
About three years ago, I suggested a method of arbitrarily subtracting 20 degs. from the temperature of the steam before dividing by the difference in temperature. Just from a variable coefficient of transmission to a constant, it increased the coefficient of transmission  $2\frac{1}{2}$  B.t.u. It is our ordinary practice to take 220 degs.—70 degs. If you take 20 degs. from the steam temperature, it would make 200 degs.—70 degs., or 130 degs., which, multiplied by 2.5, gives the B.t.u. transmission.

Following are the figures by which it was determined that the entire radiator was heated up to or very close to steam temperature.

Size of radiator, 20 sq. ft.; weight, 130 lbs.; temperature of steam, 215 degs. F.; temperature of room, 75 degs. F. weight of condensation for 10 mins., 2.94 lbs.; less normal condensation for one-half this time (figured at 0.25 lbs. per hour)  $0.25 \div 20 \div 12 = 0.48$  lbs., leaving 2.46 lbs. as the condensation due to raising temperature of the iron from 75 degs. to 215 degs.

Therefore, 2.46 lbs. condensation multiplied by 963 B.t.u. per pound equals 2,368.98 B.t.u. added to the iron. This divided by 130 lbs. and multiplied by 140 degs. rise in temperature (equals 18,200) gives a quotient of 0.1301 as the specific heat of the radiator. The steam was assumed to be commercially dry as it was taken from a separator, but may have contained a slight amount of moisture.

Perhaps if tests made in this manner with accurate instruments and careful observation were repeated by others, a more definite result could be obtained as to the exact temperature of the radiator.

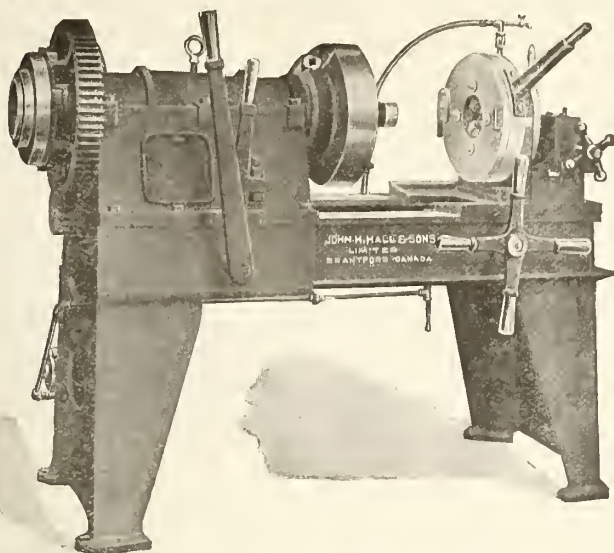


## TIPS FOR HELPERS.

(Continued from page 16.)

stay. No carpenters ever moved the stubs on me after that for I made it more work for them to move the stub than it would be to saw the floor plank. Such a proceeding has the disadvantage that you have little room to go to on a two pipe job and that the valves will have to be swung in on the final connection and that it makes mighty fine and exact figuring. With a good pinch bar and a helper one can always get a little spring however, at least enough to make the connection. If it comes to a show down the hole in the floor can be somewhat enlarged, and never, in any case will your stubs be as much out of place as if the carpenter had worked his pleasure on them.





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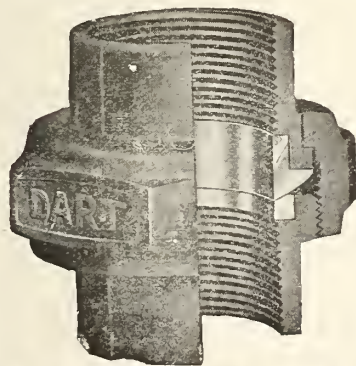
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# Complete Course in Sheet Metal Work

By L. W. KOSER

In prob. 23, plate 21, fig. 1 represents a pail, of which A-B is a boss, or reinforcement on the handle.

The pattern is simply a circle having the same curve as the handle, and is cut out to shape shown by fig. 2, then formed to shape by fig. 3, and soldered to handle.

In prob. 24, fig. 1, is a strainer pail, the brest B is developed the same as the brest on the watering pail, prob. 18, plate 20.

To develop the spout A, continue the line C-O any distance, and parallel to

this carry a line from the point V, as V-7.

Draw a cross section of the spout fig. 2, then divide it into equal spaces and carry lines from same until they cut the lines O-V and C-V.

Lay out a stretchout at right angles to C-O, as fig. 3, and carry lines from the different points on the mitre lines O-V and C-V.

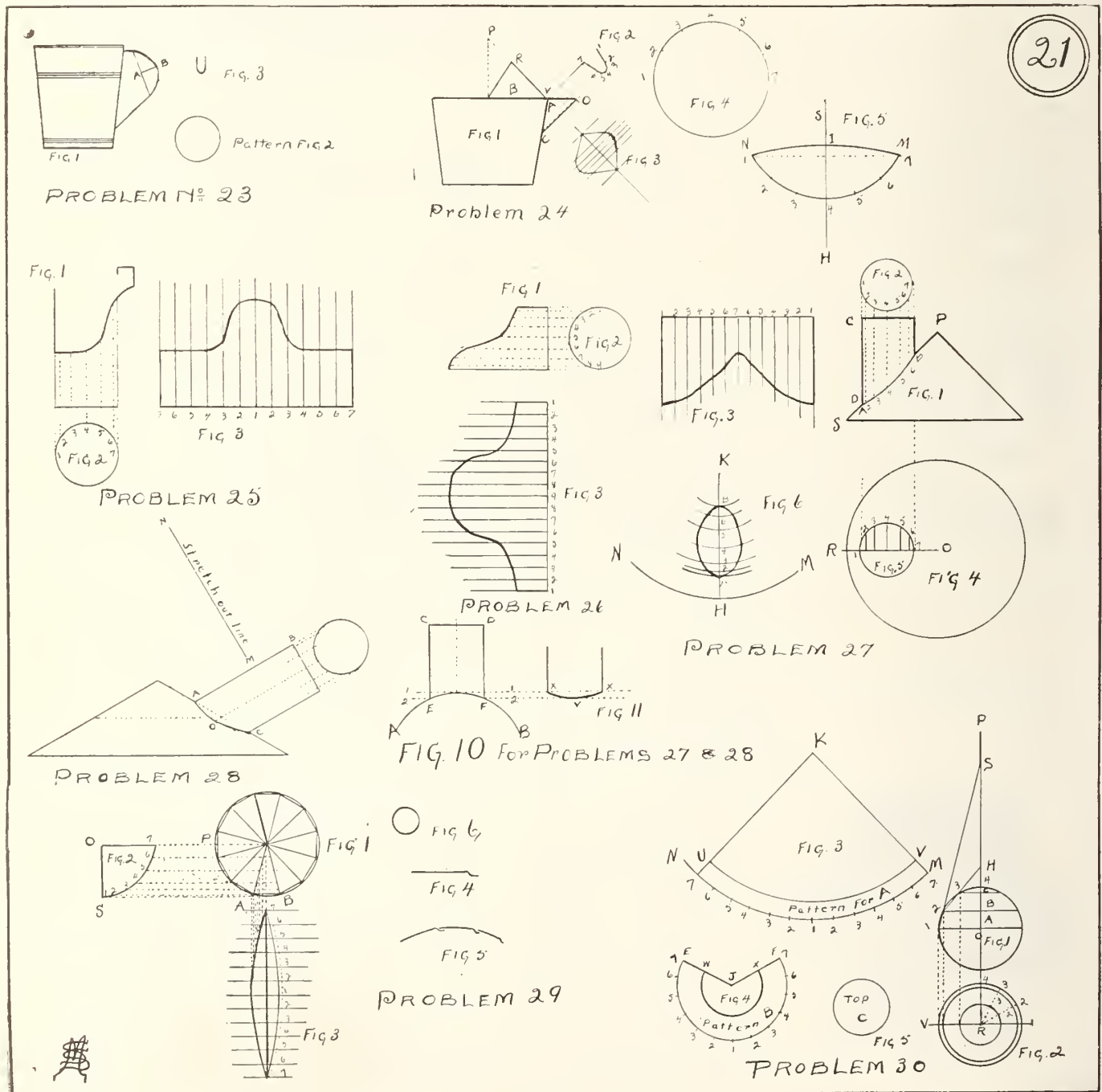
Figures 4 and 5 show the brest B developed, if it is not particular to have the pattern the same as the elevation, then cut it off on a straight line from N to M, as shown by the dotted line.

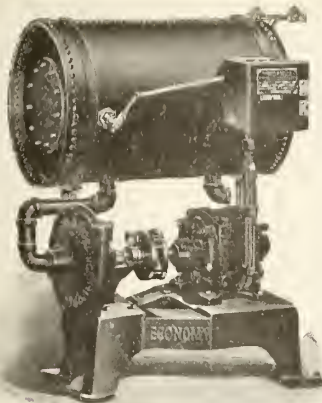
Prob. 25 shows method of developing the outlet for joining a conductor pipe to an ogee trough.

The principle of developing this pattern is the same as developing any of the patterns shown on plate 14.

The profile of the trough, fig. 1, is first drawn, then the plan of the pipe, fig. 2, is drawn directly below it, measured off into equal spaces and lines projected into the profile above it.

Then lay off a stretchout at right angles as shown by fig. 3, and so on.





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SALES PLANS—THIS BOOK IS A COLLECTION of 333 successful plans that have been used by retail merchants to get more business. These include Special Sales, Getting Holiday Business, Co-operative Advertising, Money-Making Ideas, Contests, etc. Price \$2.50, post paid. MacLean Publishing Co., Technical Book Dept., 143-149 University Avenue, Toronto.



## GENUINE ARMSTRONG STOCKS and DIES

FOR THREADING PIPE OR BOLTS

KNOWN, USED,  
COMMENDED EVERYWHERE

PIPE MACHINES,

both Hand or Power

HINGED PIPE VISES

PIPE CUTTERS

PIPE WRENCHES

RATCHET ATTACHMENTS

BARD ADJUSTABLE

BUSHINGS

Manufactured by

**THE ARMSTRONG M'F'G.  
CO.**

317 Knowlton St.

BRIDGEPORT, CONN., U.S.A.  
NEW YORK CHICAGO

WRITE FOR CATALOG

## SYPHONS

FOR

SEPTIC TANKS

ALLAN POPE - Montreal

Keep in mind the dominant fact that mankind from its first appearance on the earth has been schooled by nature to look for signs; for invitations to taste; for suggestions as to what to wear. Tell your story briefly, forcibly, truthfully, and address it through the proper media and you can successfully apply advertising as a means to increased distribution.

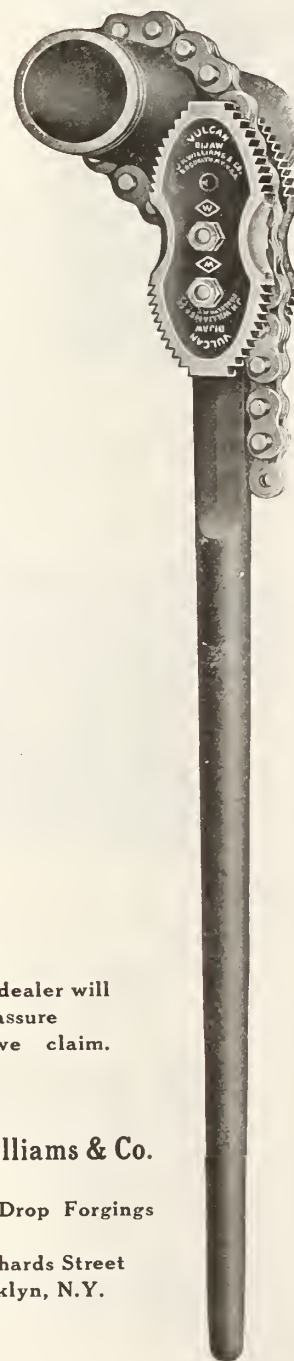
A want ad. in this paper will bring replies from all parts of Canada.

Each "Vulcan" chain is tested in a standard tension machine up to two-thirds of its breaking strain listed in catalogue table. The chain so tested is stamped "O" on the drop-forged swinging link, thus absolutely establishing the safety-factor and reliability of every wrench.

Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. No other pipe tool is similarly proved.

## "VULCAN"

## Chain Pipe Wrenches



Your dealer will  
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Superior Drop Forgings

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# NATIONAL VALVES

To obtain extra heat from hot water heating systems, at no extra cost, simply

install a "B" Heat Intensifier which, by raising the boiling point of the water from 212° to 240°, increases the number of heat units in each square foot of radiation, effecting a direct saving in pipes and fittings, and insuring an absolutely perfect circulation.

The "B" Heat Intensifier is strictly a mechanical device and operates with pre-determined accuracy. Write for a copy of our complete descriptive booklet, which shows, by facts and figures, how the National Pressure System must effect an economy.

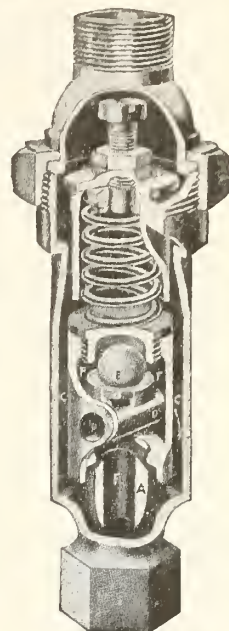
And don't forget to obtain information on the National Automatic Air Valves for all purposes, particularly on the Improved Thermostatic Valve.

**National Steam Specialty Company**

24-26 S. Clinton Street, Chicago

L. N. Vanstone, 8 Wellington St. East, Toronto. Moncrieff & Endress, Limited Scott Building, Winnipeg. Surpless, Dunn & Co., 74 Murray St., New York.

See Sweet's Index, Pages 1139, 1140, 1141.



Hot Water Quick Opening Radiator Valve.

## "MILLER" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from 1/2 in. to 2 in., with or without union, also union elbows.

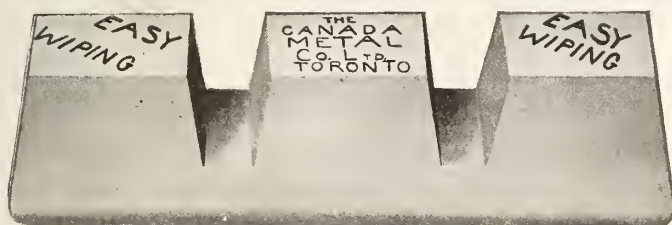
Every valve is thoroughly tested and has an unlimited guarantee. They are built for service. Ask your jobber for them.



Steam Radiator Valve.

**MILLER LIMITED - LONDON, CAN.**

## STRICTLY SOLDER FOR GALVANIZED IRON WORKERS



### EASY WIPING SOLDER

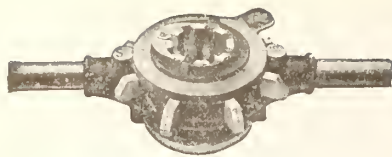
For Particular Plumbers

These are two specially good solders.

Manufactured and Guaranteed by

**THE CANADA METAL CO., Limited**  
TORONTO MONTREAL WINNIPEG





No. 6, threading  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  in. complete.  
No changing of Dies or Bushings.



**"WARREN" DIE STOCK**  
(Non receding dies—adjustable.)  
Each stock cuts two sizes. Made in four sizes.

## A Perfect Thread

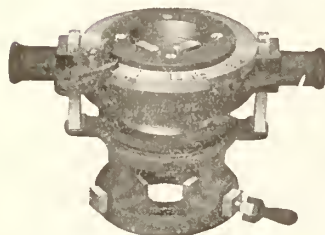
CAN BE EASILY AND QUICKLY OBTAINED  
BY ONE MAN, IF HE USES THE

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Each die stock contains one set of dies which can be used to cut four different threads—a twist of the wrist sets the size. The "BEAVER" requires less keep-up expense, as it eliminates the buying of three die sets. One Beaver set will last as long as four ordinary ones and give better service. Get our prices.

**Borden-Canadian Co.**

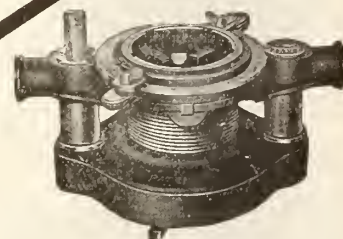
Richmond St. East,  
Toronto, Ont.



No. 25B, 1 in. to 2 in. R.H. complete.



RAPID WORKERS



No. 41, cuts  $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$  and 4 in. pipe  
No. 60 cuts  $2\frac{1}{2}$  to 6 in.

Where clients demand the best, you can safely recommend the

# SPENCER STEAM OR HOT WATER HEATER

Because—

**It reduces heating cost**

by using No. 1 Buckwheat Hard Coal at a saving of \$2 to \$3 per ton or more.

**It needs coaling but once or twice a day**

The water-jacketed magazine and patented raised grate feed fuel automatically as needed.

**It is the only Heater on which to install Regulators** as it always has a supply of fuel to maintain an even temperature, regardless of sudden changes.

**It has the quickest steaming device—**

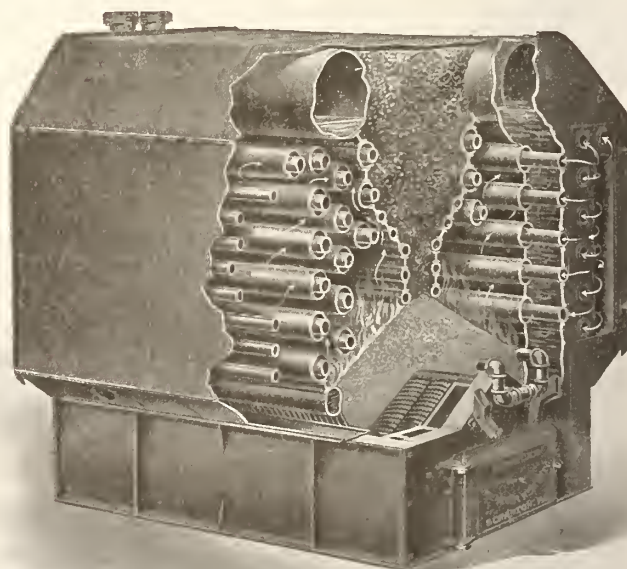
a combination of the water tube and return tubular systems.

**It is built on correct principles—**

and is a commercial success. "Spencers" installed twenty years ago are still giving satisfactory service.

**It has no "come-backs"**

Once you've sold a "Spencer" you can rest assured you've sold satisfaction; furthermore, each customer becomes enthusiastic over the merits of the "Spencer" and, enthusiastic and satisfied customers mean more trade.



**WALDON COMPANY LTD.**

92 Princess St., WINNIPEG

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## YOUR AVERAGE CUSTOMER JUDGES YOUR WORK

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FIRST:—

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Our compression work combines

Beauty in Design

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*"It's as good as it looks"*

All lines unconditionally guaranteed.

## CANADIAN BRASS CO., Limited

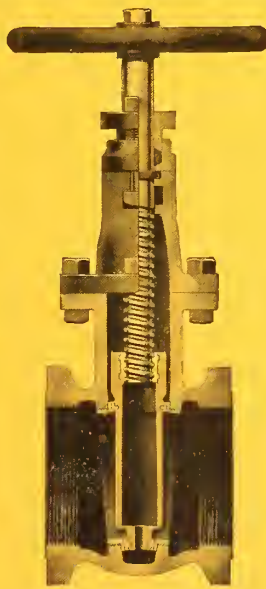
GALT, ONTARIO

## K E R R

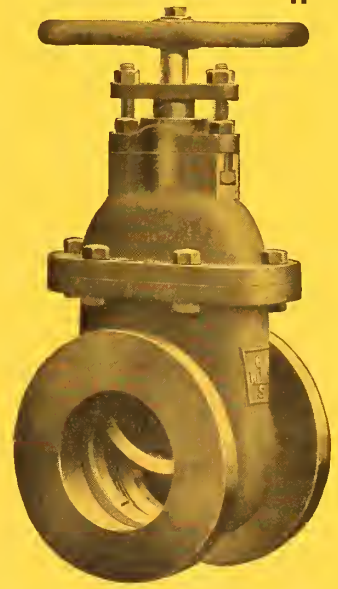
### (New "KEYSTONE" Pattern) GATE VALVES



If you have not used any of these New Pattern Valves, specify "KERR" in your next order. We want you to get acquainted with the most reliable valve on the market.



If you have been using them, we are confident that your satisfaction will bring us your repeat orders. These valves will never cause you or your customer the slightest trouble. Their high quality is consistent.



When you buy a "KERR" Valve you get a guaranteed article that is backed by a reliable firm. Many of the largest distributors of valves in Canada have sold "KERR" Valves for over 25 years, and are still recommending them as the "Best Valve."

Write us for particulars.

**Kerr Engine Co., Ltd.,**

Valve Specialists

**Walkerville, Ont.**



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For lasting satisfaction try the GALT line of Compression and Fuller work, Traps, Supplies, Combination Waste and Overflows, etc. It shows the result of good material, good workmanship; is graceful in design and pleasing in appearance.

UNCONDITIONALLY GUARANTEED

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*"We can state that  
**Empire Tanks**  
are the best"*

The above is an extract from a letter received from one of the largest plumbing shops in the Province.

This decision was only arrived at after a thorough trial, and nothing shows up the weak points, if any, like an actual test.

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*and Metal Worker of Canada*

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TORONTO, 143-149 University Ave.  
CHICAGO, 140 S. Dearborn St.

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NEW YORK, 115 Broadway

Vol. VI.

Publication Office : TORONTO, NOVEMBER 15, 1912

No. 22

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GENERAL OFFICES AND FACTORIES · PORT HOPE · CANADA

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If you had a copy of our handsome Booklet "Artistic Sanitation in the Home" in your salesroom you would be able to show your prospective customers some very artistic effects in bathroom furnishings.

Standard IDEAL Alexandra Ware is made in a greater number of designs than any other product in Sanitary Ware on the market to-day—and in introducing it you are recommending a product that is absolutely sanitary—a product that costs no more to install than inferior goods that are offered as a substitute.

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PLUMBER AND STEAMFITTER

# Beaver Brand Cast Iron Enameled Ware

Unsurpassed for Pure Whiteness of Color,  
Attractiveness of Design, Finish and Durability.



The above cut shows one of our **NEW ROLL RIM, HIGH BACK SINKS** with Improved Outlet and Large Patent Nickel-plated Strainer, with Roll Rim, High Back, Right and Left Drain Boards.

This is another of our new Fixtures that is meeting with great favour from buyers who want the best, and insist on **BEAVER BRAND GOODS**.

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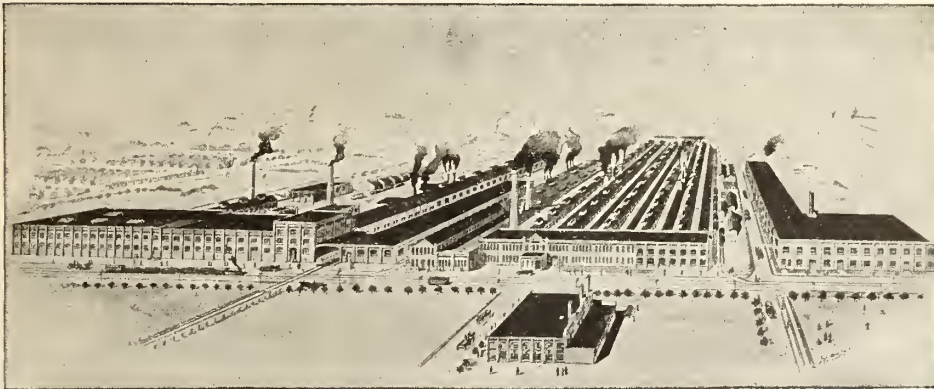
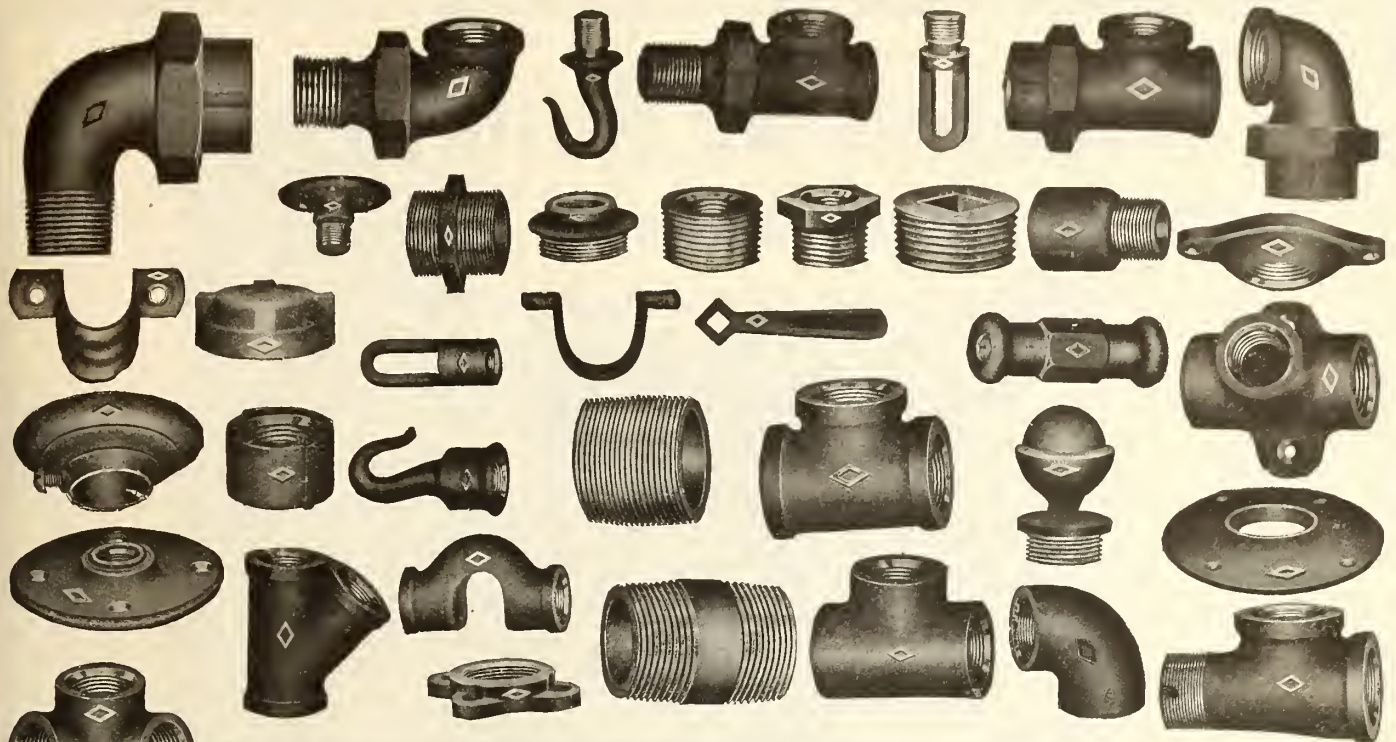
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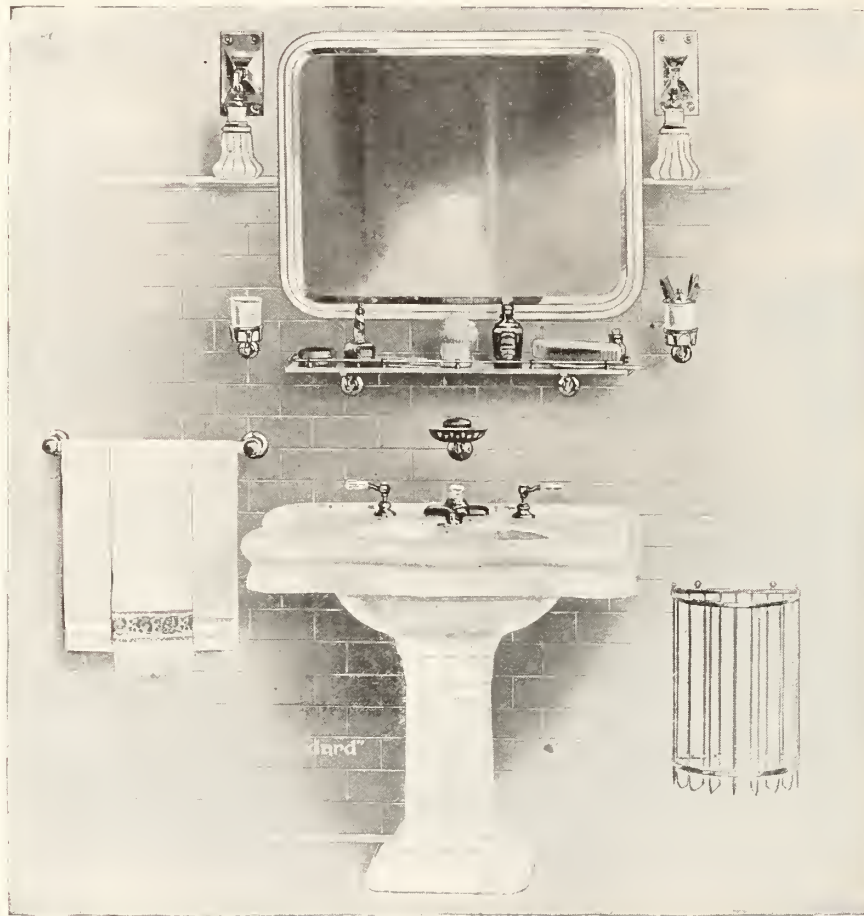
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# "Standard Sanitary"

## Porcelain Enameled Lavatories



"Standard Sanitary" Porcelain Enameled ARCADIA Lavatory with Slab, Oval Bowl with Rear Outlet and Apron all in one piece. Supported on Porcelain Enameled Panel Column Square Pedestal. Fitted with P 10256 "Alton" Fuller Combination Supply and Waste Fitting,  $\frac{1}{2}$ " P 10427 Supply Pipes and  $1\frac{1}{2}$ " P 10463 "P" Trap.

"Standard Sanitary" Porcelain Enameled Lavatories surpass all others in beauty of design and finish and are warranted against defective material and workmanship.

They are made in so many designs and sizes that it is possible to select a suitable pattern for every requirement.

The "Standard Sanitary" Green and Gold Label which appears on every genuine "Standard Sanitary" Lavatory is an assurance against annoyance caused by the use of inferior and non-guaranteed brands.

### Standard Sanitary Mfg. Co., Limited

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Toronto Store :  
55-59 Richmond Street East.

Hamilton Store :  
20-28 Jackson Street West.



# The "DAISY" Hot Water Boiler

## A Boiler That Will Increase Your TRADE

Every progressive plumber should investigate the selling qualities of this boiler.

It is the result of over 50 years of careful study of the hot water system of heating. Many exhaustive tests were made before the perfected boiler was placed on the market.

The "Daisy" Boiler is giving the Best of Service in over 50,000 buildings throughout Canada.

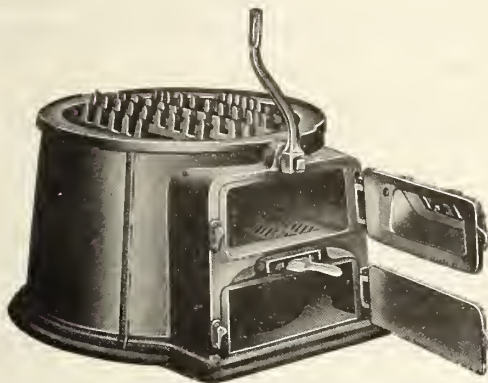
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

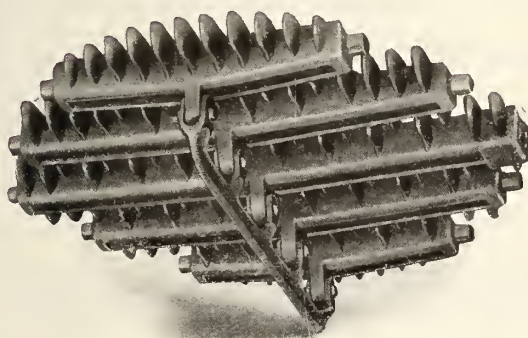
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

The Daisy is a guarantee of efficiency and durability.



DEEP BASE OF DAISY HOT WATER BOILER.  
SHOWING ASH SIFTER AND GRATE



THE GRATE

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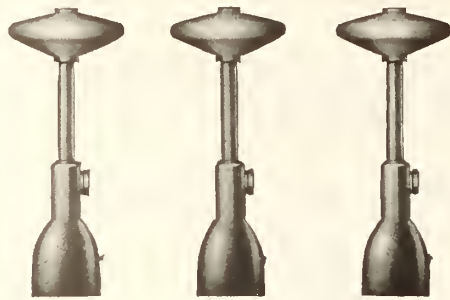
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## Theory and Practice in Honeywell Hot Water Heating

It is one thing to theorize, another to practice. A theory successfully demonstrated is a proof of its accuracy—an assurance of truly scientific conception.

The universal success, the never-disappointing operation of the Honeywell hot-water system has proven conclusively that the theory upon which it is based is correct even to the utmost detail.

An increased and positive circulation; an instantaneous heat under perfect control; quickly increased or checked; the use of smaller valves and piping; the sending of even heat into radiators at extreme distance from boiler; the one-end radiator tap, the saving of floors from "butchery": beams from weakening and ceilings from leak stains; minimum amount of piping an easy layout for the fitter, enabling expeditious placing of radiators, and the minimum cost of installation and operation.

All these points have been realized and proven by years of trial and thousands of plants in use in all countries.

Each feature combines to make the Honeywell the favorite method with house owners and the one generously and generally specified by far-seeing architects and heating contractors.

We would be pleased to furnish you with full information and engineering data.

## Honeywell Heating Specialty Company

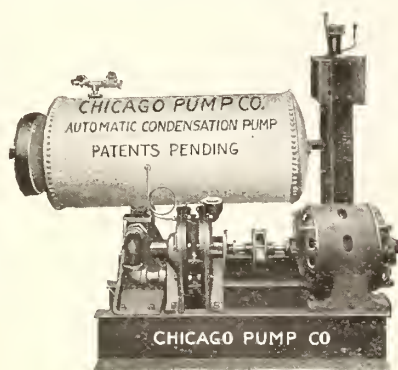
Wabash, Indiana

Frank T. Rawley,  
Canadian Manager

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Phone Main 4615



*THE HONEYWELL "UNIQUE"  
HOT WATER RADIATOR VALVE*



To Messrs. Plumber, Steamfitter and Company

## ATTENTION!

You want to make money, don't you? Let us show you how! Push the sale of our AUTOMATIC ELECTRIC CONDENSATION PUMP.

You are surrounded by buildings in which are old, ineffective HEATING SYSTEMS. Our pump can be connected to the system in a remarkably short time, and at once makes it efficient. Our pump operates equally as well on a new Heating System as on an old one, and SAVES 20-50% COAL, and much firing labor. SAVES Digging a Boiler Pit.

We are the only manufacturers of the PATENT AUTOMATIC TILTING TANK RECEIVER, which contains no float or mechanism whatever.

No danger of WATER-LOGGED FLOATS, FAILING FLOAT MECHANISM, or LEAKING TANKS when Float-arm packing wears.

Send us a Post-card for literature.

DON'T PASS UP THIS OPPORTUNITY.

**CHICAGO PUMP CO., 904 W. Lake St. CHICAGO, ILL.**

**WE  
WANT  
A  
MAN**

of good character, in each city, town and village in Canada, where we are not already represented, to act as our

### SPECIAL CIRCULATION REPRESENTATIVE.

Work is dignified and educative. Previous experience unnecessary. Duties at first need not interfere with your present employment.

**WE WILL ASSIST THE RIGHT MAN TO BECOME INDEPENDENT FOR LIFE.**

If you are making less than \$100.00 a month, and are trustworthy and ambitious to learn and become competent to handle our business in your vicinity, write us at once for full particulars.

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143-149 University Ave., Toronto, Ont.**

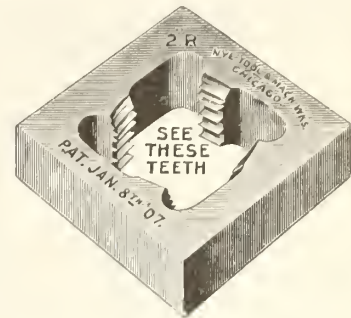
I'm  
Nye  
the  
Dye  
Man



## THERE'S ONLY ONE SKIP TOOTH DIE

It was the earliest product of the Nye plant and from the very first has sustained a reputation for unapproachable merit. This celebrated die is made by past masters in the art of tempering. Every phase of the delicate hardening process has received their zealous study.

To this experienced talent has recently been added exclusive mechanical appliances for determining, with scientific exactness, the heat each die is receiving. Specially constructed tempering furnaces are used instead of the old "hot lead process" in the Nye plant. There's no trusting to "luck" and "good guessing" where skip tooth dies are made. The material used in the Nye die matches its excellence of design and workmanship. Jessop's world-famed tool steel, the highest priced material of its kind on the market, furnishes the basic strength of this marvelously tough tool.



FITS ANY SOLID STOCK

### TRY THE NYE SOLID DIE

It has no equal for accuracy, ease of cutting and durability. If it does not give more satisfaction than any die you have ever used, send it back. Sold the "Nye Way." FREE TRIAL.

NYE, THE DIE MAN.

The Nye Tool and Machine Works, 124 N. Jefferson St., Chicago, Ill.

# WROUGHT PIPE

BLACK and GALVANIZED. SIZES, 1/8 IN. TO 4 IN.

All our pipe thoroughly inspected, tested to 600 lbs. hydraulic pressure and branded.

**ALSO NIPPLES**

Black and Galvanized  
All Sizes

Ask your jobber for



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**CANADIAN TUBE & IRON CO., LIMITED**

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# TWO CENTS PER WORD

You can talk across the continent for two cents per word with a WANT AD. in this paper.



# OUR COMPLETE LINE

**"KING"** Round Water Boiler.  
(Sizes 1 to 8½)

**"ROYAL"** Round Steam Boilers.

**"ROYAL"** Square Steam and Water Boilers  
(19" to 48")

**"KING"** Radiators, Water and Steam.

We have a great deal of pleasure in announcing to our friends in the Trade that **our complete line** of Boilers and Radiators for Steam or Water are now ready for delivery.

We have all sizes, from the smallest to the largest, in stock for immediate delivery.

## Prompt Shipment Guaranteed

SEE Sectional View of 36"  
**"ROYAL"** Steam Boiler.

## Heating Surfaces

NOTE the **Arched Fire Chamber** and greater **over hanging** heating surfaces, than any other cast iron boiler on the market.

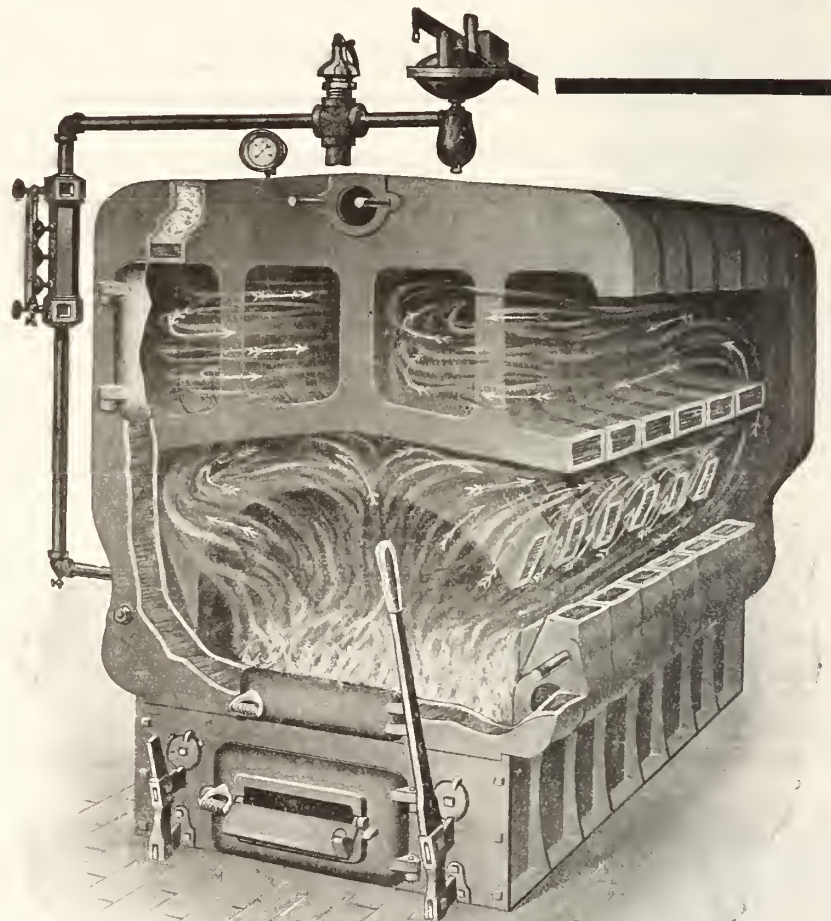
## Fire Travel

OBSERVE the **Triple Fire Travel** on **both sides** of boiler, also the **cross fire channels** between each section.

Satisfy your customers. **"ROYAL"** Boilers will satisfy the **most** exacting. **Try one.**

The **"ROYAL"** Boiler carries with it the same unqualified guarantee as the **"King"** Water Boiler.

Get our new Boiler Catalogue, just off the press.



Try us for your Steamfitters' Supplies.

# STEEL AND RADIATION, Limited

TORONTO  
Head Office, Fraser Ave.

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MONTREAL  
138 Craig St. W.

# Sanitary Engineers Take Large Contract

Many Lines Embraced by Contract Plumbing, Heating and Wiring All Contracted for by Sanitary Engineer—Many Modern Improvements Introduced — Some Specifications Followed in Installing the Plumbing in New Apartment House, Toronto.

The Wellsboro apartment house, which is now under construction at 414 Jarvis street, Toronto, promises to be one of the most up-to-date and best equipped apartment houses in the city. The architects are Redmond and Biggs, Toronto; builders, Deeth & Sons, Toronto; sanitary engineers, Keith & Fitzsimmons, Toronto.

It will be of interest to follow up the different lines of work which were contracted for by Keith & Fitzsimmons. Their contract includes the execution and completion of a complete system of plumbing including refrigerator drains, and fire stand pipe, and fire hose outlet on each floor; complete gas fittings; complete steam heating plant; complete electric wiring system for lighting; an intercommunicating telephone system, each telephone fitted with push button for janitor's phone and electric door opener; a vacuum cleaning system with several outlets on each floor; a complete indirect expansion system of refrigeration; and a battery of laundry tubs installed in the pent house.

Quite a difference between the amount of work covered in this contract and that undertaken by most sanitary engineers under old conditions. A few years ago a lot of this work would not have been touched by the average plumber. Take for example electric wiring and telephone systems. How many plumbers would have undertaken this ten years ago? The field of the sanitary engineer is increasing steadily. Just what line he may undertake next is difficult to state.

In addition to what has been mentioned above there is another branch of work, which is gradually coming to be recognized as belonging directly to the sanitary engineer, namely the planning of the heating system. This used to be done altogether by the architect. But in many cases plans and suggestions were found to be far from practical. Architects are realizing that they do not understand heating systems, and heating engineering thoroughly enough to do the planning, and are now turning this line of work over to the sanitary engineer. And why not? There are a thousand reasons why the man who installs the system and holds himself responsible for its perfect working should plan it rather than the architect. In

this again Keith & Fitzsimmons are to the front. All plans for heating, wiring, plumbing, etc., for the Wellsboro apartments were made by them. It will be interesting to give some of the specifications followed by Keith & Fitzsimmons in carrying out their contract.

Specifications of Plumbing for Wellsboro Apartments, 414 Jarvis street, Toronto. Messrs. Deeth & Sons, builders.

## Drains.

From 3 ft. outside of south wall in north building and north wall in south building run in iron drain of 6 in. extra heavy C.I. soil pipe to bottom of each stack, as shown on plan with all necessary ys, bends, cleanout fittings, etc. All drains to be suspended from joints with heavy Grabler hangers and all joints to be finished properly caulked with oakum and pure lead. Joints to be finished flush with soil pipe hubs. All drains to be laid in as per accompanying plan. Drains to be connected properly to main tile drain which is to continue past apartment buildings for garages.

## Soil Pipe.

From drain connections in basement to 3 ft. above roof, run 12-4 in. and 10-2 in. C.I. soil pipe stack of medium weight, with all necessary offsets, wastes and vent fittings. All soil pipe to be properly caulked with oakum and pure lead finished flush with soil pipe hub, where passing through roof to be flashed with 5 in. sheet lead.

## Soil Pipe Connections.

All connections between soil pipe and lead waste and lead vent pipes to be made with heavy brass thimble, and soldering nipples and properly wiped solder joints.

## Rain Water Leaders.

From drains in basement as shown in plan run 6 rain water leaders of 4 in. C.I. medium soil pipe with joints caulked with lead and oakum with all necessary traps, bends, etc.

## Copper Hoppers.

Connect with same 6-4x12 heavy copper hoppers properly flashed to roof, and made water tight.

## Water Main.

Provide and lay in two 2 in. water mains with 2 in. gate valves 1/2 in. draw

off cocks and connect to 3 in. water service from the street. Run said 2 in. water main to domestic boiler in furnace room and connect to same. Lay from 2 in. water main all necessary branches, risers and connections to fixtures in each bath room and kitchen, no cold or hot water riser to be less than 1 in. diameter. Hot and cold water branches to separate stop cocks placed in convenient positions.

Provide 1/2 in. hose outlet at front and rear of each building and one to garage and at both sides of north building in rear.

## Circulation Pipes.

Lay on from domestic boiler in furnace room a 1 1/4 in. galvanized circulation pipe to each bath room and connect same to highest fixtures with all necessary branches and stop cocks.

## Gas Fittings.

From each kitchen lay a separate 1/2 in. gas main to meter room in basement and provide one drop light in each kitchen. Also run 3/8" supply to re place in living room. All piping to be capped and tested. Also 1/2 in. to gas lights inside of each hall and each boiler room. Pay all Gas Company charges.

## Stand Pipe.

In front and rear of each wing of building, where desired by owner provide and run a 2 in. galvanized iron stand pipe from inside basement wall to six feet above top floor with 1 1/2 in. connection at each floor. Provide and connect on each floor two 1 1/2 in. approved hose valves with brass couplings, two approved hose racks and two 50 ft. lengths lined fire hose with brass nozzles and couplings.

## Stand Pipe Main.

Provide and lay from city to inside of front wall of basement two 3 in. galvanized water mains, plumber paying all city charges for same, with all necessary elbows and tees.

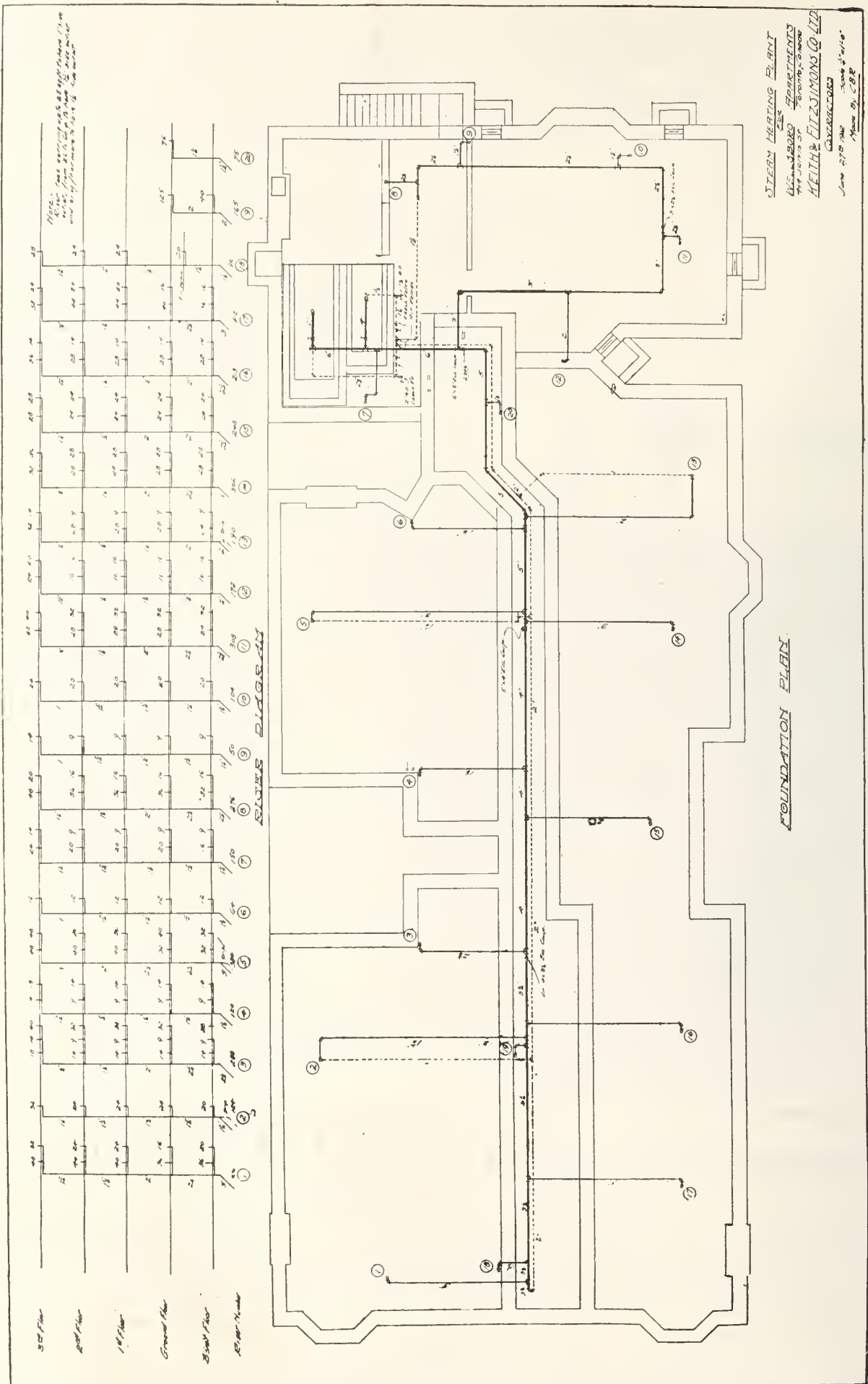
Also provide and connect up two 2 in. gate valves and 1/2 in. draw-off cocks. Inside of front wall of basement run 3 in. galvanized pipe up and through front wall of each wing and connect to each one 3 x 2 1/2 brass Siamese connection with caps.

## Syphons.

Install in boiler pits to drain same to drains if necessary.



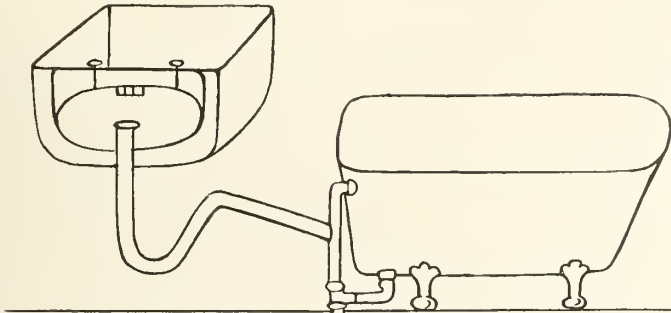
# PLUMBER AND STEAMFITTER



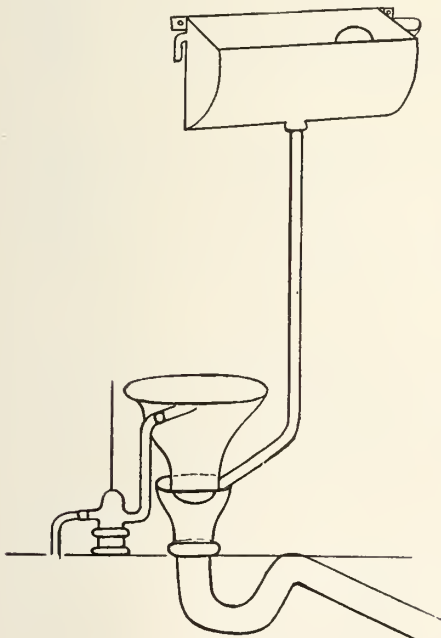
## Two Fine Examples of "Model" Plumbing

**Toronto Master Plumber is Called to Residence of Doctor and Finds Why Former Work Had Been Done "Cheaply" — Two Installations Which Have Unique Features.**

**T**ORONTO, Ont.—One does not need to go out of the city of Toronto to find examples of poor plumbing. Quite recently a boss plumber of this city was called into a doctor's residence to make an estimate on the plumbing for a new bath room. As a model the doctor showed the bath which he had been using for some short time, made some slight comment on the high quality of workmanship in the plumbing, but emphasized particularly the very reason-



able amount which he had expended on his improvements. Fig. I. shows these improvements to advantage. Notice how the basin is drained into the overflow pipe from the bath tub. No doubt the work was cheap, but who would expect to find such a job in a doctor's residence. This, it may be stated, was an up-to-date piece of workmanship.



Another feature about the bath room specially attracted the attention of the plumber who had been called in, but

this time it was an old, old style of plumbing and not something which was supposed to be up to date. Fig. II. serves as a diagram. In looking over the sketch it will be noticed that the vent of this old pan closet is used for flushing purposes. In addition to that, there is a hopper valve, connected for flushing too, and in the right place. Do you wonder the plumber was interested?

Everyone knows that much careless

plumbing is done, but we do not generally find instances in the houses of medical men. The boss plumber said that this double flushing arrangement was the first he had ever seen of its kind. Surely he had to go to a very unexpected place to find it.

It isn't very often that such cases are brought before our notice, but when they do come, they generally deserve some attention.

### HOW LARGE FOR THE VENT STACK?

Editor, Plumber and Steamfitter.—Can the vent stack ever be run smaller than 4 inches? If so, will you please state why?

R. C. H.

The vent stack should not be smaller in diameter than 2 inches, and then it must not be depended upon as the main stack of the installation. Many times the vent stack can be run less in size than the waste pipe for the reason that the air flows through the pipe much more readily than water: some four times as readily, it is stated.—D. C. H.

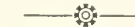


### LENGTH OF BRASS PIPE.

Editor, Plumber and Steamfitter.—Kindly tell me the average length in feet that brass pipe comes in.

C. H. M.

The brass pipe of the corresponding size to iron pipe generally comes in lengths of 12 feet each. You can have special pipes made, however, of any desired reasonable length by ordering in advance.—D. C. H.



### WHAT MAKES THE WATER AFFECT THE METALS.

Editor, Plumber and Steamfitter.—In some cases the water seems to eat the pipe all out. What is it in the water that makes it do so?

K. K.

It is stated that the reason is because there is, in the water, either free or in solution, some oxygen or carbonic acid.—D. C. H.



At the recent annual fair of the Revelstoke Agricultural Association, the Lawrence Hardware Co. made a display of an ideal bath room and were so successful as to obtain a first class diploma. Mr. Ward, who is the foreman of the company, was in charge of the work, and he, too, was awarded a special diploma. The work reflects credit, not only on the company, but also on their foreman.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, NOVEMBER 15, 1912

### WHAT ACCOUNTS FOR BUSINESS FAILURES?

JUST WHY so many plumbers should be reported as having failed financially seems rather difficult to understand. This year, of all years, seems to have been an excellent one for business. Business men everywhere are most optimistic with regard to business; manufacturers are unable to keep up with the very increased demand, although they have greatly enlarged their factories, also their output. Builders have had a very busy year of it, and the rush is by no means over yet. There has been an increased amount of business for the sanitary and heating engineer as well. Why should there have been a large percentage of failures in so prosperous a year?

The question is there before us. In such a year as this it would seem that such a question was altogether out of place. There has been a large amount of business done. Hasn't it been evenly distributed?

In the first place, careless calculating has accounted for much failure. It may safely be said that no two men make an estimate on a job in exactly the same way. Half a dozen men figuring on the same job will make six different estimates, and every one claims he is right.

Many things go together to make up the differences in the final estimates. It is not simply that one man figures on a greater gain than another, that he considers his total expense of upkeep greater and makes every job pay its share. There are differences in almost every calculation. Here, for example, are two ways of figuring the cost of a job. One man figures exactly the amount of material required. From wide experience he knows pretty correctly the amount of time required to make every joint, install every radiator, put in every foot of piping, wrap every foot of piping, etc., and from that he calculates the cost of installation. He knows exactly the amount of material required and the cost of installing it, and he includes everything. Then he adds on what he thinks will cover his own expenses in connection with the job, for example, railroad expense, street cars, etc., and last of all, adds on his own profits, first having been very careful to figure his total expense of upkeep. When he is through he feels satisfied that he has taken into consideration everything that is connected with the job. He feels sure enough of his own figuring to state that the job cannot be done for less and be a source of profit to the man who takes it. Whether others put in a lower tender is a matter which does not much concern him, for he has gone into everything very minutely and feels that he knows what he is talking about.

Another engineer does not do his figuring nearly so carefully. He makes a rough estimate of the material necessary, perhaps more from a general knowledge of his trade than from measurements on plans; he lumps up everything and concludes that the job will take six weeks, eight weeks, or more, depending on the extent of work to be done; adds in what he thinks would be a very fair gain and puts in his tender. He has made no thorough calculations of material, time, cost of carrying on his business, nor has he allowed anything for overhead expenses.

The difference in the final estimates that these two men will make may or may not be very great. In some cases the second man may "strike it lucky" and come out on top. In his rough estimate he may have put in a large enough tender to cover everything and still allow himself a fair gain. Or he may find before the job is finished that it is costing more than he thought, and that he is up against a losing proposition.

Too great care cannot be taken in making calculations. To come out even on a job is not enough. Doing business for fun is a pretty expensive proposition in the long run. And it is only the man who carefully takes everything into consideration, who does not do business for fun once in a while.

The second great cause of failure amongst sanitary and heating engineers is price cutting. It is a very generally recognized fact that there is a tendency on the part of the owner of a house to accept the lowest tender. For that reason engineers who are anxious to get contracts often cut prices just a little more than they can really afford to do.

When a man is really anxious to get a job there is a very great tendency to deceive himself. Although he knows that labor is scarce and that the cost of labor is more liable to be greater than he estimated rather than less, still he is inclined to take a very optimistic view of the situation. If only he gets the contract, then everything will go well—everything will be bound to go well. Taking that standpoint he makes his cost of labor as low as possible, cuts down his own gain and allows less for expenses, which are bound to creep in. He does not figure on any reverses which may happen and cause him delays. He is taking a very optimistic view of the case, and to get the job is the main thing. But very often, before he is through with the job, his standpoint changes from one of optimism to one of pessimism, for he finds he is playing a losing game.

This year has been one which should banish the idea of cutting prices from contractor's minds. Plumbers have not had such difficulty in getting contracts as in former years. There has been a tremendous amount of business done, and it has been well distributed. No one has needed to be without a job on his hands. But in spite of all that many financial failures have been reported this year.

At any time price cutting is poor policy, and especially in a time of great prosperity. The class of business acquired by cutting prices is very often not desirable, and does not pay. Then why cater to such business?

Careful calculation and the shunning of price cutting will not only bring you in a good class of business, but business that will reward you for your time and labor spent at it.

# Plumbers Should Get Holiday Trade

Methods To Be Employed in Getting After It—People Give Useful Presents Nowadays and, Therefore, the Sanitary Engineer Has Certain Lines Which He Can Offer for Sale.

ONLY forty days till Christmas will be with us! The very thought of it brings up before our minds a picture of people hurrying to and fro, looking anxiously into store windows, and through countless lines of Christmas goods for something. As to what that something is, the people themselves often have no idea.

Preparations for the Christmas trade are being made by merchants all over the country. The grocer, the hardware man, the dry goods man, the druggist, the bookseller, all have ordered special lines of goods to meet the Christmas demand. And they have not only ordered goods but they have been planning how they are going to make their stores look more attractive, and what schemes they are going to use to enable them to do more business this season than ever before.

Mr. Plumber, where do you come in? Have you not some lines which will be in special demand around Christmas time? You may not be called upon to install a new heating system, or to fit up a new bathroom but there are a hundred other lines in which you can do a rattling good Christmas business if you only look alive.

This is a practical age in every way. A few years ago Christmas presents meant something altogether different from what we now consider them. The old idea was to give something which was pretty, something which might have very little use whatever but would appeal to the senses for the moment. That the Christmas present should be a luxury was also a very common idea in the not far distant past.

But to-day the viewpoint is altogether changed. The article that is to be of the most real use and value is coming to be regarded as the greatest gift. The parlor is giving way to the living room—which is simply another way of saying that in the modern house articles are bought not to be looked at and used only

on very especial occasions, but that they are bought and placed in the home because of the real comfort that is to be derived from their being there.

## The Useful Gift.

Mr. Plumber, have you anything in your store that is going to be of real use to the man who buys it? Or can I go so far as to ask if you have anything in your store that is not going to be of real use to the man who buys it? There is a very great difference, to be sure. That part is for you to decide.

A plumber's store used to be regarded as a store of necessities, and as a place where one should go only for necessities. Looking at that in a narrow way, plumbers were apt to think that so long as they did good work, trade would come to them no matter how dingy and untidy their place of business looked. But at the present day plumbers handle so many fixtures and side lines that much of their business has little to do with actual plumbing, and good work on a job is not sufficient advertising.

Ambitious, go-ahead plumbers recognize this change and are now bustling round to cater to the shop trade.

A plumber's store is a store to which one may go for necessities. So the old idea ran, and so we believe to-day. The great problem to-day then is to educate the people as to what constitute necessities.

To do this merchants everywhere have found the window one of their greatest and most valuable mediums. Nothing will attract the attention of the people faster than a good window display, no matter what goods are used. Show cards too do their part, and more especially around Christmas time, price cards are of very great benefit.

Many plumbers have gone after the Christmas trade in the past. They all state that there is great profit in it, and they are going after it again this year. If those who have tried the Christmas trade have found it profitable, then all

who are asleep to the chances before them, are missing a share of profits which is rightfully theirs.

There must be a distinction made as to what articles are to be especially featured at this season. Some will attract the attention much faster than other and will appeal to people as being suitable for Christmas gifts. Much will depend, then, on the discriminating powers of the plumber.

## Goods to be Featured.

For an example, mirrors have been found to make very good sellers. Many of these are made now to match porcelain bathroom fixtures. Such a mirror adds very greatly to the appearance of the bath room. It not only gives it an appearance of neatness and cleanliness, which every bath room should have, but also adds greatly to the general appearance by tending to make all fixtures of the same style of material. A mirror of that stamp makes an excellent present for a man. It means that upon receiving it he will be able to shave in the bath room where he has hot and cold water right at hand. The gift also appeals strongly to women for, while they are making a present to their husbands they are also buying something which will add greatly to the appearance of their home.

This is only one of the many fixtures that might be specially featured. Tooth brush holders, towel racks, soap holders, sponge baskets, bath room cabinets, even fancy clothes hooks are amongst many other articles which might be used to attract the attention of the Christmas shopper.

Many plumbers carry lighting fixtures too, and these make very handsome presents. They are a line designed specially for the beautifying of homes. The desire to have a beautiful home is so common to men and women alike, that in order to make these sell, all that is necessary is to display them. It is not





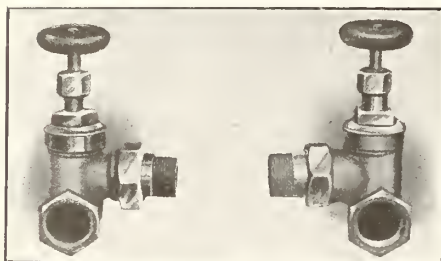
# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## SHOWING DIFFERENCE IN CORNER VALVES.

Editor, Plumber and Steamfitter.—I can not readily tell which is the right and which is the left of the corner valves. Will you please be kind enough to show the same in the next issue of the



Right-hand Valve. Left-Hand Valve.

Fig. 1.

paper? I take great interest in the questions and answers which give me much valuable information.

L. H. Powers.

For the benefit of our correspondent we publish a cut of each valve and under each valve is the proper name. This will make the matter clear.—D. C. H.

## TO KEEP THE HOT WATER FULL.

Editor, Plumber and Steamfitter.—Several hot water systems in this place have the expansion tanks constantly go-

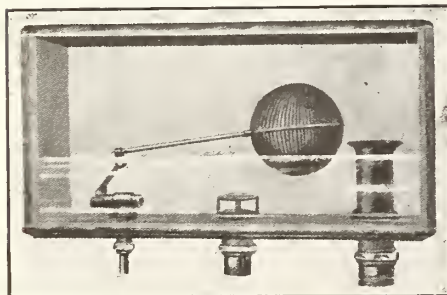


Fig. 2.

ing shy of water. I wish that you would show some means of supplying the water so that the system will be kept full all of the time.

James Rogers.

We show an automatic expansion which will accomplish the purpose desired. The connection at the extreme

left is for the supply; the middle one is for the expansion while the connection at the right is for the overflow. This tank is rated to care for jobs up to and including 3,000 square feet of heating radiation.—D. C. H.

## TO PREVENT THE TOOLS FROM RUSTING.

Editor, Plumber and Steamfitter.—Some of the wrenches, hammer heads and stock handles get pretty rusty. Do you know of any way that it can be prevented?

Sam Devine.

Speaking generally, we believe that the tools you mention have not been kept properly cleaned, that they have, many times been thrown into the chest covered with mud or sprinkled with water. It has been our observation that the man who wipes up the tools properly every night with a piece of waste that has on it some good lard oil, seldom has rusty tools. We have seen kits that have been carried for ten years and never a speck of rust on any of the tools. It is said that boiled linseed oil, if allowed to dry on the tools, will prevent rust, but all the same we believe that a little elbow grease applied opportunely will do the business in each and every case. Try it out for a few months and see if we are not right.—D. C. H.

## FOR THE PLUMBER'S OBSERVATION.

Editor, Plumber and Steamfitter.—The other day I went into the cellar of a certain building and observed a certain plumber at work. He slammed a stilson wrench on the wrong side of a stop and waste and made the same onto a pipe with a wrenching motion that nearly twisted the valve in pieces. Now, when it came time to try out, of course the valve did not make good and the manufacturer was blamed for an imperfect piece of goods. I want to state right here that if I had been the boss of that job the plumber would have been fired right then and there; for a man who calls himself a plumber and who does not know any better than to put a stilson

wrench on a piece of brass, does not deserve to hold the job. Again, in putting the wrench on the end of the valve that was not on the pipe he would tend to twist the valve and spoil it.

Such men are not mechanics. They are mere pipe butchers.

J. H. G.

## DIFFERENCE IN CONSTRUCTION BETWEEN WASHDOWN AND SIPHON-JET CLOSETS.

Editor, Plumber and Steamfitter.—I know that there is a difference, but as

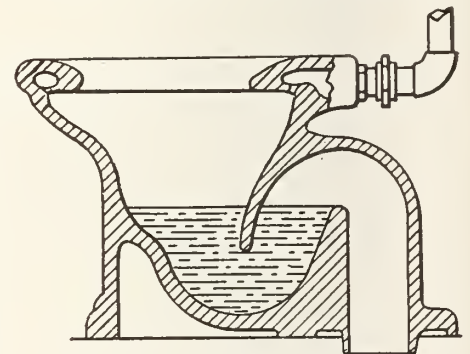


Fig. 3.

one cannot always break open a closet to find out, it is impossible to see it. Will you show illustrations on the washdown and the siphon-jet closets?

R. E. G.

Figure 3 shows the washdown and Figure 4 is the siphon-jet. We believe

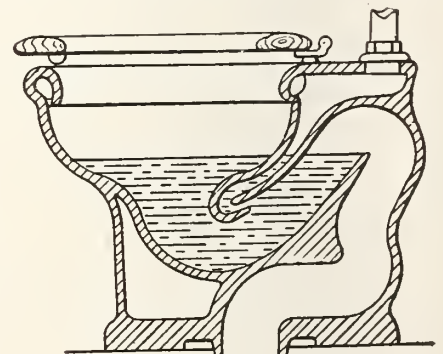


Fig. 4.

that the drawings will, otherwise, explain themselves.—D. C. H.

### INFORMATION ON CHIMNEY.

Editor, Plumber and Steamfitter.—Will a chimney that is 4x2 in the clear on the inside be large enough to carry a job of steam heating that has about 1,000 square feet of radiation?

J. A. Parton.

Hardly. A job that has 1,000 feet of radiation would call for a boiler having about a 9 inch smoke stack. Now, a 9 inch smoke stack has an area of over 63½ square inches and if you have a chimney only 4x12 you have just 48 square inches. In other words, you have cut down the chimney capacity over 15 inches. No boiler will work well under such conditions and will not furnish the steam and so the building will not be satisfactorily heated. As this question has been asked frequently, we will here give some definite rules which can be preserved for future use.

#### Rules.

1. The chimney should be at least three feet higher than the main part of the building, or any wall near it.
2. It should be in good condition; free from cracks or checks and the top part not full of holes from mortar that has dropped out.
3. Remember that it is the chimney that produces the draft and not the heating stove, boiler or hot air furnace, and if the heater is to work correctly, the chimney must be positively all right.
4. A good chimney will be vertical without bends or turns, will be flat at the top and not have openings directly opposite for other heaters.
5. All openings not used should be closed. A green chimney will not work perfectly for the first few weeks until it gets dried out.
6. Make the smoke pipe as direct as possible, having as few elbows as may be necessary. Do not push the smoke pipe into the chimney beyond the inside edge of the brick nor leave openings around the pipe. Avoid using a "T" joint if possible.
7. Be sure that you know how to operate the dampers that control the heater. Keep all of the flues well cleaned, the ash pit cleaned out, and in steam boilers, the water glass should show at least half full when there is no pressure on the system. In hot water jobs the altitude gauge will give one the correct register of the amount of water in the system.
8. The inside capacity of the chimney must be equal, at least, to the number of square inches contained in the smoke pipe that leads into the chimney. Otherwise a smoky, gas-throwing heating job will result.

9. Sometimes a sheet iron stack will extend the chimney and cure its evils. It should fit tightly and not decrease the chimney's size.—D. C. H.



### WILL RANGE BOILER SET BELOW LEVEL OF THE RANGE WORK?

Editor, Plumber and Steamfitter.—On a job that I shall put in some time this fall the range boiler will have to be placed in the cellar. Now, will you please be kind enough to tell me if it will work and how to put it in so that it will give good results?

F. C. Larson.

If installed with the hot water connection between the water front and the range boiler dropping directly from the front to the boiler the job will be a failure. This has been tried many times and never, to our knowledge, succeeded, as it is contrary to the principle of the way hot water operates, the tendency being for it to rise. Consequently you must provide some way for the water to rise and have sufficient weight to send the circulation down into the range boiler. This you can do by running the hot water pipe directly up from the water front until it reaches the ceiling before you make it turn and drop to the boiler. The distance from the water front to the ceiling should be slightly more than the distance between the water front and the range boiler. Do not use pipe less than three-quarters the size and be careful to have the pipe well reamed. Make as few turns as possible; 45 degree turns would be more desirable than making right angle turns. The air that will tend to collect at the top where the turn is made to drop to the cellar can be taken out by making such a connection to one of the fixtures in the second storey as will permit the drawing of hot water from this point. Connected after this fashion, we do not see why the job should not work satisfactorily and give plenty of hot water.—D. C. H.



### HEATING SURFACE ON ¾ IN. PIPE.

Editor, Plumber and Steamfitter.—I have got to make a coil for an old cook stove where they want a range boiler put in. Now what I want to know is, how much ¾ in. pipe will I have to work into the coil to get as much surface as there would ordinarily be on the average water front?

John Helmer.

The ordinary water front has, we believe, about 110 square inches of heating surface. Of ¾ in. pipe it takes 45 inches in length to make (or equal) one square foot of heating surface. From these facts we believe that you can work out the problem successfully.—D. C. H.

### TEMPORARY REPAIRS.

Editor, Plumber and Steamfitter.—Sometimes a fellow has to stop a leak on a plumbing job in mighty short order and I know that there must be more ways than one. Will you not give some of the different ways.

"Helper."

Some of these leaks occur from short splits in the pipe and others from sand holes. In such cases as mentioned you can make a good tight job that will hold for a few days if you take a piece of thin rubber tubing and smear the side that goes next to the pipe with thick white lead, then binding the rubber firmly on the pipe with string twine or copper wire. A more permanent job can be made by using the rubber as mentioned, and then fitting pieces of tin to the pipe and then putting clamps over all. A job fixed like the last will last for several years. If the leak comes in a joint, it will have to be caulked and the best material to use in such a case is some tin foil which you can get at a cigar store or any place where they sell tea from chests. If an "L" or "T" is split, the shortest and easiest way is to take it off and use a perfect fitting, that is on all small pipes. Of course, a large fitting (like 6 inch) might be more profitably banded. It all depends on the time and place.—D. C. H.



### WHY THE AIR CHAMBERS?

Editor, Plumber and Steamfitter.—Of what use are the air chambers on a force pump?

J. Hannigan.

When you start the pump you set in motion and also stop a steady column of water. The water is practically incompressible and therefore unless some sort of a cushion is provided there will be a case of water hammer. The air chamber helps to prevent this. It also has the effect of equalizing the flow between the strokes of the piston.—D. C. H.



### HOW CAN ONE TELL HARD FROM SOFT WATER?

Editor, Plumber and Steamfitter.—Sometimes when I go to put in a plumbing job it would be a good thing if I could tell whether the water to be used was hard or soft. Can you tell me an easy way to find out this?

J. H. Rauser.

Have a small bottle of alcohol in which a little soap has been dissolved, with you when you go to the job. Into a glass of the water, put a few drops of the mixture. If it then seems to turn milky the water is hard; if it does not turn milky, it is soft.—D. C. H.



# A Plumbing Contract of Unusual Proportion

Description of Plumbing system in New Skyscraper—One of New York's Finest Office Buildings—The Installation is Acknowledged as Being up-to-date and Complete in Every Particular.

THE following description of the plumbing in the new Æolian Hall, New York City, is taken from the Plumber's Trade Journal:—

In New York City on 42nd street between Fifth and Sixth avenues and extending through to 43rd street stands the new Æolian Hall just completed by the Æolian Company, who will occupy the lower floors and lease such offices in the upper stories, which they may not need, for various business purposes. This imposing structure is one of the finest office buildings in the city and is up-to-

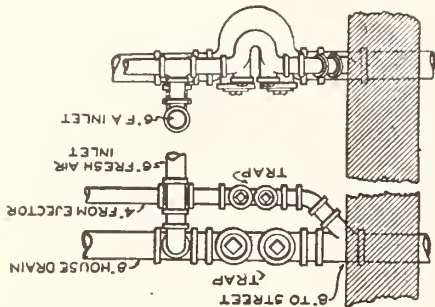


Fig. 1. Arrangement of Main Running Traps on Drainage System in the Æolian Building.

date in every particular, producing a very striking appearance with its front of limestone and pressed brick towering over two hundred and fifty feet in the air. The entire first six stories and two sub-floors have been reserved for the owner's use and from the sixth to the seventeenth floors the space is given over to offices, these floors boasting the highest ceilings of any office building in New York.

This building is equipped with electric elevators, vacuum cleaning system, mail chutes, hot and cold water, etc. The plumbing work was installed by J. W. Cooney, of New York, from plans and specifications prepared by the architects, Warren & Wetmore, also of New York, and is described in the following:—

The entire drainage of the building is taken care of by two house sewers, one of which drains into the 42nd street sewer at the front of the building and the other of which runs into the 43rd street sewer at the rear of the building. Both of these sewers consist of 8" tile pipe from the street sewer connection back to a point 12" outside of the area walls where 8" extra heavy cast iron soil pipe is substituted, and extension back into the building is made with this material.

These sewers are graded a minimum of  $\frac{1}{4}$ " per foot, the tile pipe being of the best vitrified salt-glazed pipe and the

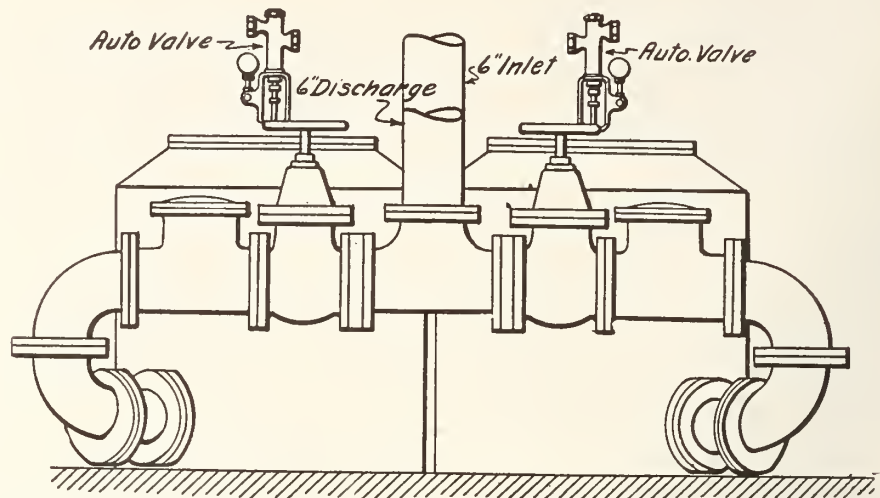


Fig. 2a. Piping Connections Between the Sewage Ejectors in the Æolian Building. Cross Connections Permit Either Unit to be Used.

extra heavy cast iron pipe of the following weights:—

2" pipe, 5½ pounds per foot; 3", 9½; 4", 13; 5", 17; 6", 20; 7", 27; 8", 33½; 10", 45 and 12", 54.

The cast iron soil pipe was uncoated until after testing, when it was painted with a heavy coat of asphalt paint. Just inside the building walls 8" extra heavy cast iron running traps having two hand-holes, with brass trap screws, ferules, and screw plugs are placed as shown in Fig. 1. Back of these traps are connected 6" fresh air inlets which are extended to the height of the sidewalk and end with fresh air inlet valves.

The main drainage system connects all fixtures above the sewer level with the

street sewer direct and all other fixtures below this level are run into two air-and-water-tight 50-gallon sewage ejectors from which the discharge is connected into the sewers to the street and the fresh air inlets as also indicated in Fig. 1. All the floor drains, wash of filters, emptying pipes, overflows of suction tank, drip tanks, and the waste and overflow from refrigeration tank are connected into the ejector, which discharges into the 43rd street sewer.

The ejectors are set in two batteries each of two cast iron 50-gallon units with 5" inlets and 4" discharges to and from 6" headers as shown in Fig. 2, both being cross connected. On each unit is mounted a No. 3 direct act-

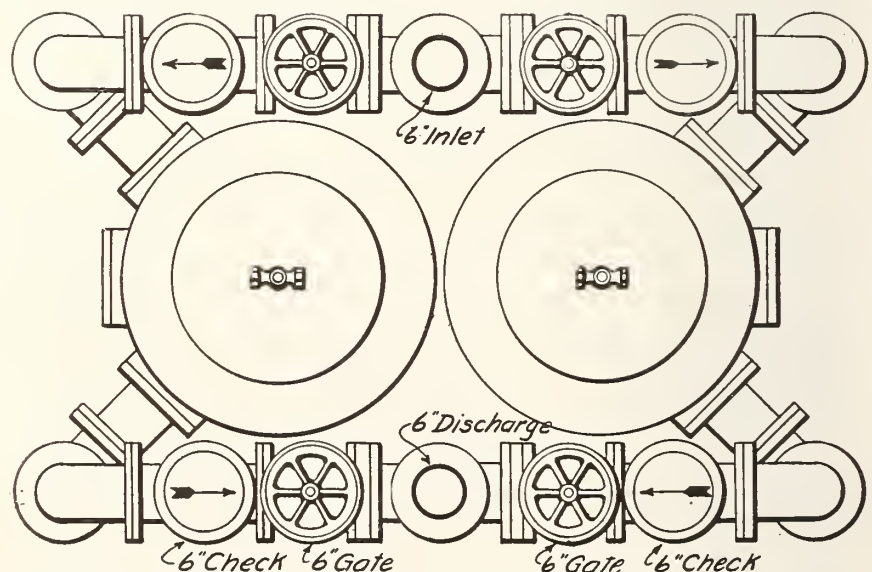


Fig. 2b. Plan of one of the Batteries of Automatic 50 Gallon Capacity Sewage Ejectors in the Æolian Building.

ing balance operating cock (constructed without cup leathers, dependent springs, diaphragm or pilot valves) the operating device being float actuated. Each operating valve is by-passed to permit hand operation if desired.

These ejectors are operated by compressed air, which is furnished by two 5" x 6" x 5" duplex steam driven horizontal fly wheel compressors mounted on cast iron sub-bases and set on a concrete foundation 12" high. The com-

pipes are made by screwing a 1" ring on the end of the wrought iron pipe and calking this into the cast iron hub. Junctions between lead pipes, or lead and brass pipes are formed with wiped solder joints. Between lead and iron pipes brass ferrules, wiped to the lead and calked or screwed into the iron, were used. No cup joints were allowed nor unions on sewer side of any trap.

Cleanouts are located at the ends of all underground drainage lines, and

the bottom of the lead sleeve extending 18" out from the pipe in all directions and attached to roof in a watertight manner.

Where branches are connected to the soil and waste stacks TY's are used but where vertical risers join the horizontal runs at the bottom Y's and eighth bends are employed. The sizes of the branches installed for the various fixtures are: 4" to water-closets, 3" to floor drains, and 2" and 3" to all the other fixtures.

Lead pipe was used only for the water closet and slop sink bends and the short 2" vent connection attached to same. Bends for water-closets and slop sinks are of 8-lb. sheet lead, painted with two coats of metallic paint and well flanged down to the marble platforms and soldered to heavy brass floor flanges. The floor flanges are bolted to the bowl and to the marble safes. Fig. 3 shows a plan of the arrangement of one of the toilets which may be taken as a typical example while Figs. 4 and 5 are elevations of the water-closets and lavatories respectively as shown in the plan (Fig. 3.)

All fixtures not otherwise described are trapped by a separate trap with trap screw in convenient place and a separate back vent connection, arranged so that the condensation water, dirt, etc., cannot lodge in the pipes. Leaders, floor drains, safes and refrigerators are in general separately trapped, the leader traps being of the running type and located at the foot of the leader. All traps are extra heavy and bath tub traps are of brass.

The vent connections to the various fixtures are of the sizes called for in the

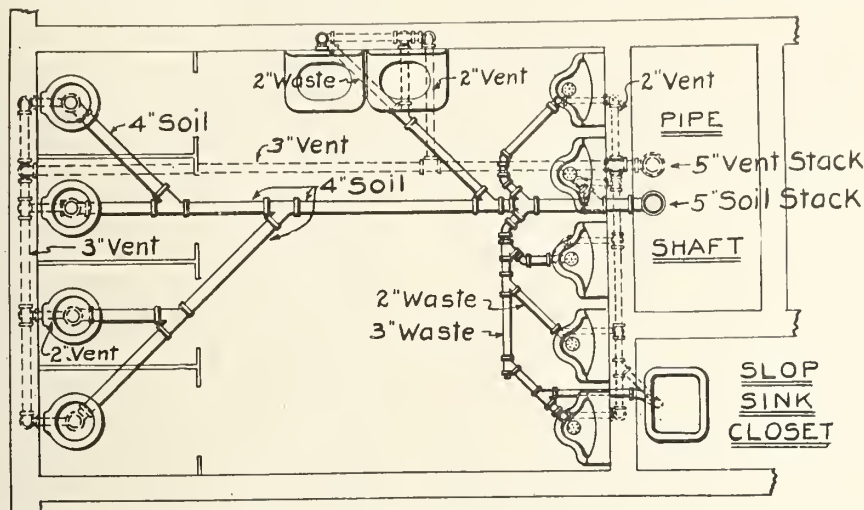


Fig. 3. Plan of the Typical Toilets, Showing Location of Fixtures and Piping Arrangement in the Æolian Building.

pressed air is stored in a tank approximately 4'-0" x 6'-0" with reinforced tapings, safety valve and blow-off. Each unit of these ejectors is guaranteed to discharge 50 gallons per minute continuously and after erection they were painted with three coats of lead and oil paint.

The entire drainage system, which is located underground, is composed of extra heavy cast iron, and all above ground is of extra heavy galvanized wrought iron pipe. The weights of the cast iron pipe have already been stated and the wrought iron pipe is genuine wrought iron, lap welded, factory tested to 300 pounds, no steel pipe being allowed on the work. The weights and the thicknesses are as follows:—

3	"	...	10.25	lbs. per foot...	0.30"	thick
3½	"	...	12.47	" " "	...	.32" "
4	"	...	14.97	" " "	...	.34" "
4½	"	...	18.22	" " "	...	.36" "
5	"	...	20.34	" " "	...	.37" "
6	"	...	28.38	" " "	...	.43" "

In connection with this pipe extra heavy drainage fittings of galvanized malleable iron, threaded and recessed were used, being tapped so as to give a grade to the branches of ¼" per foot.

The joints in brass and wrought iron pipe are made up with red lead or litharge and linseed oil. Connections between wrought iron and cast iron

wherever changes in direction are made, together with the other locations where required. These cleanouts are of the same size as the pipe and have heavy cast brass cleaning screws, which are about ⅛" thick. The screw caps have a solid nut 1" high and 1½" wide across the flats. Similar cleanouts are installed at the foot of all vertical soil, waste, and vent lines in the basement, on all trips and when offsets occur on the vertical soil, waste, and vent lines at the various stories. The cleanouts located in the ground or below the cellar floor are set in brick boxes with extra heavy cast iron frames and covers.

The soil stacks are run with adjacent vent stacks and the vents are connected at the bottom to the soil lines so as to wash out the rust and scale. The soil waste and vent lines are carried up separately above the main roof and are capped with heavy galvanized wire baskets. Offsets in all vent lines are made at an angle of not less than 45 degrees from the horizontal. The fittings on the vent piping are standard, malleable, beaded, galvanized, cast iron water fittings.

When run through the roof the stacks are all increased to 4" diameter (if below this size) or are increased 1" in diameter, if 4" or above in size. They are flanged with 8-lb. sheet lead, and have roof connection of same material,

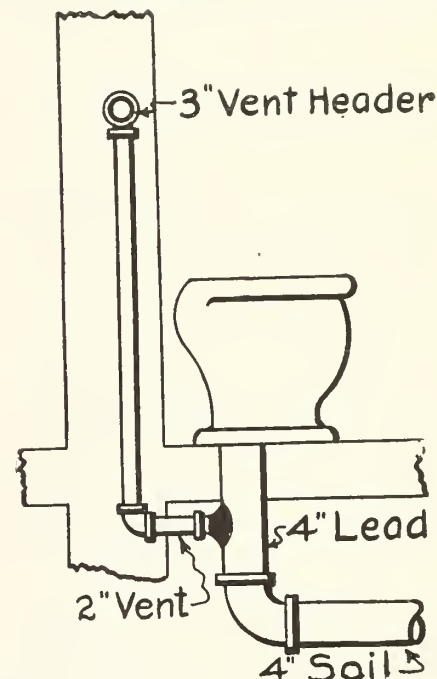


Fig. 4. Elevation of Closet in the Æolian Building, Showing Vent and Drain Connections.



New York code and branch pipes are kept well above the tops of the fixtures. The earthenware traps in the water-closets and slop sinks are ventilated by connections taken from the branch soil or waste pipe immediately below the floor and all fixtures are back vented into the vertical vent risers.

The floor drains in the sub-basement and sub-basement mezzanine are of the heavy galvanized iron cesspool type, with hinged strainers and are connected to dry wells. The floor drains in the

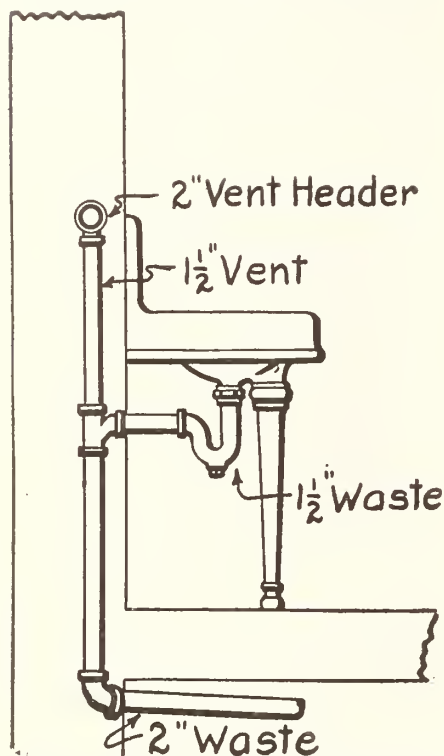


Fig. 5. Sectional View of Lavatory and Piping used in the Aeolian Building.

basement are of brass. The catch basins used with the floor drains are of cast iron and are about 9" square.

The leaders are of extra heavy galvanized wrought iron pipe and are provided at the roof outlets with screwed brass soldering corrections for soldering on the roof connections.

The water supply throughout is of standard weight galvanized wrought iron pipe, except the fire line and pump discharges, which are extra heavy. Where connections are extended from the building to the city water main they are run with 2" extra heavy galvanized wrought iron pipe well painted with asphaltum. The fittings on the water supply lines are standard, malleable, beaded, galvanized cast iron water fittings.

On each supply main close to the outside wall is located a 2" shut-off valve inside of which is located a water meter with a fish trap protected by 2" gate valves on each side, while a 2" check valve is located in the house side of the water meters. The mains are run from

this point in full size to the filters, where connection is made into an 8" header. From this header 4" branches are run to the filters and an 8" valved by-pass is extended around the filters to provide for direct connection to the surge tank. On the discharge side of the filters connection is made into another 8" header which continues to the suction tank where two 4" valved connections are made to each section of the tank controlled by Ford balance float valves.

A 4" line is run to the boiler feed pumps and is cross connected for emergency to the house tank pressure line with reducing valves, so that water from either the house tank, surge tank, or street may be used. The street pressure pipes are also connected by a check valve and gate to the fixture feed lines on the discharge side of the filters so as to allow the fixtures on the lower floors to be supplied with water under street pressure in case of emergency.

From each compartment of the suction tank is run an 8" pipe (with valves on each side branch to the tank) which is cross connected with gate valves both to the 8" discharge line from filters and the 8" filter by-pass before mentioned, which makes it possible to supply the combined house and fire pumps (to which this line connects) from any one of the three sources. Each discharge from the boiler-feed pumps is cross connected into a 4" boiler-feed line through gate valves and checks so that either or both pumps can be used as desired. In front of each of the three boilers a 2" valved connection is placed to supply feed water to the boilers.

A 4" line is also run from the discharge side of the filters to a muffler tank, and the discharge from the muffler tank is connected to the suction side of the boiler-feed pumps with a cross connection running to the hot water supply lines.

From the discharge side of the house pumps a 4" line is run to the house tank on the roof with a 4" branch into each compartment with a Ford float valve on the outlet. From a point just above the fire reserve in the tank and from each compartment is run a 6" line with a gate valve connecting into the 6" header in the ceiling of the sixteenth floor. This header furnishes the normal cold water supply for all fixtures throughout the building through valved drops which have 2 1/2" valved outlets at each level to supply fixtures. The branches to each fixture as well as to each group of fixtures are valved.

The size of the supplies to the various fixtures is: For water-closets, 1/2"; urinals, 1/2" cisterns, 1/2"; bath tubs, 1"; lavatories, 1/2"; slop sinks, 3/4"; sinks, 3/4", and wash tubs, 3/4".

All branches to fixtures are terminated with 8" air cushions, and all main supply cold water lines are extended to a height of four feet above the highest fixture on the line.

A total of six sill cocks is installed on the 42nd street and 43rd street fronts and are of polished brass with hose nozzles and key handles. The branches supplying these cocks are 1 inch in size and are taken direct from the 2 inch street supply. Shut off valves are provided inside the building with 1/2 inch drip valves for emptying.

The suction tank is of the open type and is set on a masonry foundation; it has a capacity of about 21,000 gallons. The house tank is also of the open type; is set on the roof and has a capacity of about 18,000. Both of these tanks are constructed of 3/8 inch steel plate, riveted and calked tight, with proper stiffeners and braces. Around the top a 4x3 inch angle curb is run securely riveted to the shell. In the centre of both tanks a partition is placed so as to allow cleaning of either half without cutting out the other side.

Covers are provided on the suction tank of well braced steel and made removable, and two large size manholes are located in these covers so as to come over the ball floats. Above these manholes in the sub-basement mezzanine floor are set two steel manholes to permit access to the tank from this level. Both tanks are carried on iron beams and are provided with steel ladders to reach the top of the adjustable ball floats and for entrance on account of cleaning and repairs. The covers were painted, after being thoroughly cleaned, with three coats of metallic paint.

Each compartment of the house tank has the following pipe connections: 6 in. overflow, 6" fire line, 4" supply pipe, 4 in. emptying pipe, and 2 in. cleaning pipe; and each compartment of the suction tank has connections as follows: 6 in. overflow, 10 in. pump suction, 4 in. supply pipe, and 4 in. emptying pipe.

The overflows are located 8" below the tops and the overflows and drawoffs are both connected indirectly to the drainage system. All pipe connections to the tanks are made with inside and outside flange joints. Gauge glasses reaching the full height are provided for each compartment with finished brass bodies and four brass guards with valves and pet cocks. Under each tank is placed a steel safe extending 6" beyond all sides and turned up 4" high around the edge. This safe has a 4" waste connected through a check valve into the overflow and draw-off pipe.

The filters installed consist of four cast brass, single cylinder type with a capacity each of 150 gallons of bright, clean and palatable water per



minute. Their operation is controlled by a single controlling valve moving across a plainly marked dial. The inlets and outlets are 4" in size and the waste 3". The filter beds consist of sharp, screened, silicate sand and gravel of about 3'-8" in depth and the washing water is thoroughly distributed over every part of the bed during the washing operation by a system of strainers which effectually prevent caking and lumpiness. The wash of each filter is connected through a 3" pipe with the overflow of the suction tank. The filters are so valved that one filter can be used exclusively from the street pressure supply to serve the lower floors of the building. A coagulating device is also installed with all connections between it and the filter of brass pipe.

The discharges from the two fire pumps are cross connected with valves and checks so that either or both can discharge into the 6" fire heater and so that either can discharge into the 4" house tank supply line. Valves are so installed that either system can be cut out as desired. The 6" fire line extends from these pumps (which are located in the engine-room) to the house tanks on the roof, where a branch is connected to each compartment as near the bottom as possible and provided with a check and gate valve. Just before the check valve, is branched off an 8" header which is run along the ceiling on the sixteenth floor, and from which four 6" drops are run down to the sub-basement ceiling, at which location a cross connection is made by an 8" line running the full length of the building, which is in turn connected with the 6" discharge from the pumps and with the 6" Siamese hose connections on each street front. The Siamese connections are provided with checks and valves with drips which are run to the ejectors. They are of heavy pattern, polished cast brass, with regulation nozzles as approved by the New York Fire Department. The nozzles are provided with heavy, polished, cast brass caps and chains.

On each of the four standpipes 2½" branches with 2½" angle valves are located at each floor. The valves are of nickel-plated brass with similar wheel handles, escutcheons, etc. The spindles are set horizontally and with the hose nozzle looking down. At these outlets is furnished 100 feet of 2½" best linen hose, with nickel-plated brass nozzle and expanded right couplings. This hose is carried by a solid polished brass Howard swinging hose rack—the hose, rack and valve together with a fire extinguisher and fire axe all being located in a cabinet.

The hot water supply for the building is furnished from a single heater of 1,200 gallons capacity per hour based on a rise in temperature from 50 degrees

to 160 degrees Fahr. with steam supplied at atmospheric pressure. This heater is approximately 38" in diameter and 130" long, being constructed with a ¾" boiler iron shell and 7/16" steel heads, and tested to 175 pounds hydrostatic pressure. The girth seams are single riveted and the longitudinal seams double riveted. The steam coil is composed of 2" seamless drawn brass tubing tested to 800 pounds inside pressure.

This heater is provided with flanged openings for 2" water inlet, 4" water outlet, circulation pipe, 3" steam inlet, 1½" drip outlet, mud blow-off and thermometer connection. A safety water relief valve is provided and a thermostatic temperature control valve. The 2½" cold water for the heater supply is taken from the 4" supply line in the attic, where a valve is located and is run down to the heater inlet in the basement. The 4" hot water supply is run from the heater with extra heavy galvanized iron pipe up to the ceiling of the sixteenth floor, where a 4" header is located. From this 4" header hot water drops are extended down to the basement, being 2½" in size as far as the sub-basement ceiling and 2" below this. The ends of these drops are connected together and carried back to the heater. Expansion joints are placed on both the hot water riser and the hot water drops at the third and tenth floor levels.

Altitude gauges are installed in the engine-room on a marble gauge board. The gauges are in 12" nickel-plated cases and the marble is fastened to the wall with nickel-plated bolts and acorn nuts. These gauges are connected so as to show on one street pressure, on another the cold water from roof tank, another the hot water heater attic pressure and one the hot water heater sub-basement pressure. Each gauge is provided with a ½" nickel-plated cut-off valve, pet cock, nickel-plated syphon, etc.

The valves used on this work are made of tinned steam metal and are good for a pressure of 200 pounds. They have heavy brass wheel handles and double discs. Those larger than 2½" are iron body, brass seated and brass stem gates. The exposed valves at the fixtures have brass wheel handles and are polished or nickel-plated to match the other fixture accessories. The check valves up to 3" in size are heavy brass lifting check valves, globe type.

Every valve except those immediately at the fixture has a brass tag attached with the designation and number stamped thereon, the tags attached to nickel-plated valves or white metal valves being of similar material.

A typewritten list of valves is covered with glass, framed and hung in the engine-room, and shows the location, function and tag number of each.

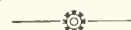
Ice water is supplied to every floor, the total number of outlets being 38. The cooling plant is located in the sub-basement and consists of a cooling tank, circulating pump, a steam driven compressor and a brine pump, with the necessary condensing and cooling coils. The cooling medium employed is carbonic acid gas, and the circulating pump is of 2" x 1½" x 2¾" size. Water supply is furnished through a connection taken from the discharge side of the filters and run to the ice water tank with a float valve at that point. From this cooling tank a 1¼" suction line is run to the circulating pump through a check and gate valve. From the delivery side of the pump a 1" main is run along the sub-basement mezzanine ceiling supplying the two risers, which are of 1" size up as far as the ninth floor and ¾" from the ninth floor to the roof. A 1" valve and check is placed on the pump discharge and a 1" valve on each of the rising lines at the basement ceiling. Each fixture is direct connected to these lines with a ½" valved branch. From the tops of the rising lines ¾" returns are run back to the ice water tank in the basement. All pipes and the ice water tank are covered with cork insulation. Drainage to the sewer is provided for the ice water tank, cooling coils and other portions requiring same.

All cold water pipes, leaders, house drains, fire lines, etc., throughout the cellar, working floors, sixteenth floor ceiling, and at tanks, are covered with two thicknesses of tar paper, 1" of the best hair felt, 1 thickness of resin and sized paper and No. 8 canvas cover neatly sewed on and fastened with copper wire. All hot water lines are covered with sectional covering and with No. 8 canvas sewed on, and the risers in shafts and pipes in attic and sixteenth floor ceiling are banded with brass bands.

The hot water heater is covered with 1½" magnesia covering, cemented, wired, banded and covered with No. 8 canvas.

The ice water lines are insulated with cork covering and moulded fittings, covered with No. 10 canvas sewed on and painted with two coats fireproof paint.

At all other points the pipe covering consists of sectional cover, suitable for hot or cold water as the case may be, with moulded fittings of same material. This is jacketed with No. 10 canvas and banded, over which a No. 10 canvas cover is sewed on and painted with two coats of fireproof paint.



Edmonton, Alta.—G. F. Haswell has recently opened up a plumbing shop here.

Edmonton, Alta. — Thos. A. Hems-worth has started in the plumbing and steamfitting business.



# Complete Course in Sheet Metal Work

By L. W. KOSER

Prob. 26, fig. 1, represents the body of a scoop, fig. 2, the plan, and fig. 3, the pattern. We will not explain this further than shown by the drawings, but will leave the student to develop this.

Problems 27 and 28 represent pipes meeting a cone-shaped article at different angles (as, for instance, the pipes at the top of a furnace).

The only difference between these problems and the butt mitres shown on plate 14, is in the mitre line.

As will be readily seen, the sides of the pipe set lower than the top and bottom owing to the curvature of the surface they join.

The only thing necessary to know is the depth of the mitre line in the centre. The mitre line can then be drawn free hand.

To get this depth we take the curve of the cone where the centre of the pipe joins and see how far the sides of the pipe must set in to meet the curved surface.

In fig. 10 we illustrate how this is done.

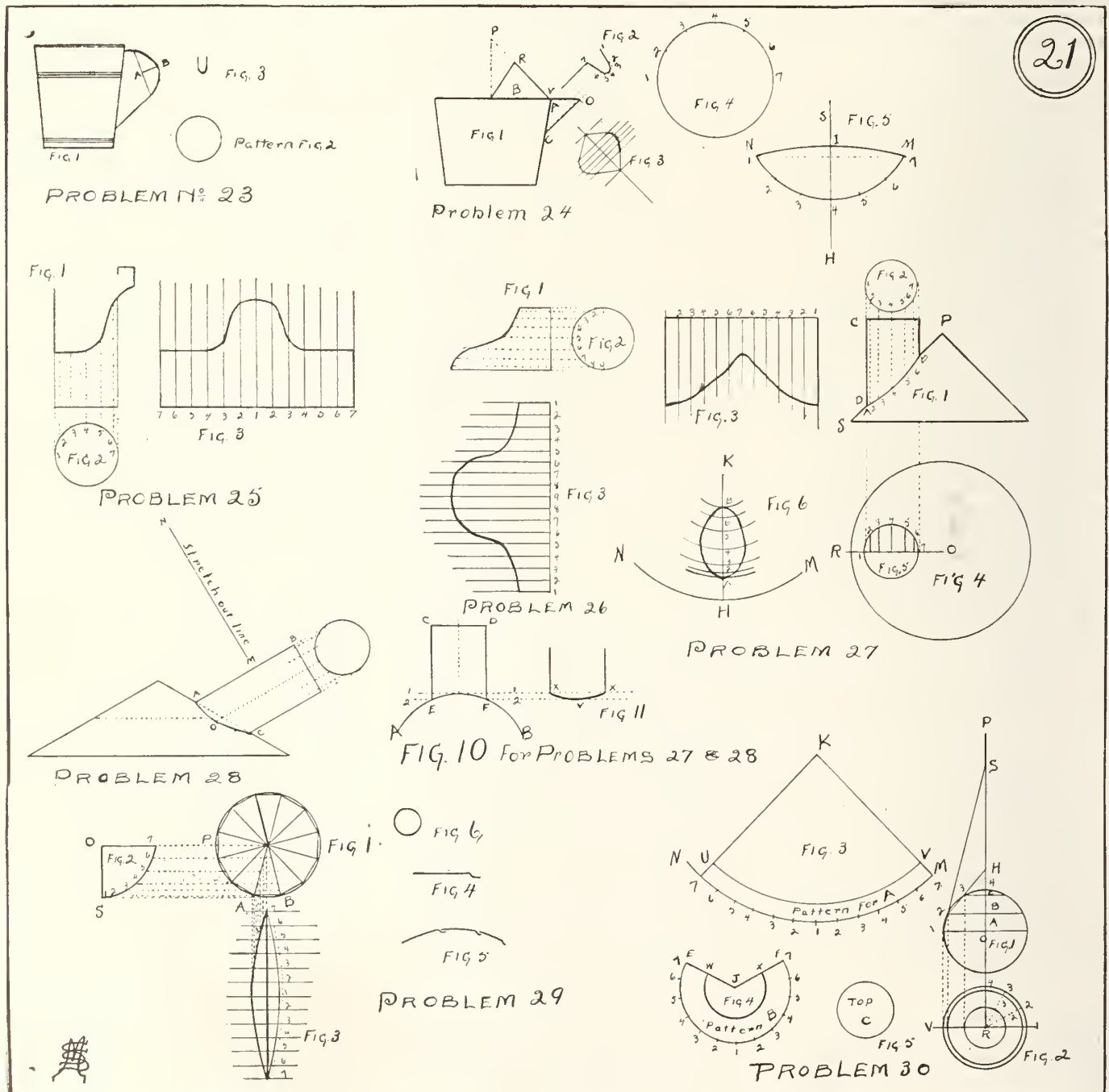
The curved line A-B represents the curve of the cone. The line C-D-E-F represents the pipe butting into it. The line 1-1 shows where the centre of the

pipe joins, and the line 2-2 shows how far the sides must set in to meet the curve. Fig. 11 shows how the mitre line would be for a small pipe joining a large one, while in problems 27 and 28 the mitre line is pitched.

Now, taking problem 27, we first draw the elevation, fig. 1, showing the pipe meeting the cone. Then the plan, fig. 2, and divide it off into equal spaces.

We then draw the mitre line A-B, having first found out how deep it is in the centre. Then drop lines from the plan, fig. 2, to the mitre line A-B, and across onto a stretchout of fig. 2, thus

(Continued on page 20)



# Tips for Helpers---By "Phoenix"

(Chapter 9)

**B**EFORE a boy has completed his period of apprenticeship he may have the chance to work in several different shops and under several bosses, while the journeymen he runs across are good, bad and indifferent.

Unless the boy has a very strong character he is more than liable to pick up habits which will be a great detriment to him later when he enters the working field on his own merits. There are two customs in our craft which are equally pernicious and they are at each end of the line. One is the attitude of some of the workmen which is expressed in the words, "make 'de job hold out."



One way of carrying out a job.

The other is a position some bosses occasionally take and can be best described as "'trowin in 'de work." Either of these practices will surely get the apprentice into hot water at some time or other, and after a few lessons he will not get caught again in that matter.

Perhaps a few words said here may open some one's eyes and prevent some unpleasant things happening and so we will do our best to explain. There never was a more short-sighted policy than that of the workman who does his level best to "make 'de job hold out." It has not the first principle of justice or right to bolster it up. He cuts his throat from the very start in doing this

act. He robs his employer of money to which he has no right, reduces the profit on the job (sometimes soldering to the extent that there is no profit whatever left) and by so doing renders his employer just so much less able to hire him for work in the future. I have known several shops that failed and they went under mainly because the men all worked so slow, spent so much time on the jobs that there was no profit, many of the jobs being done at a loss.

Plumbing and heating work goes slowly do the very best one can. The journeymen have received a bad name, as mechanics, but part of it comes from this very practice of holding back the work.

This foregoing statement must be qualified, somewhat, however, as least as far as the men are concerned, for they are not always to blame.

Occasionally, a master will be found who figures on having the work go in slow. It is for his interest as he has figured it on days wages or else the percentage plan and so he wants the men to loaf on the job all that they possibly can.

Now when such a state of affairs happens all the journeyman can do is to loaf according to directions or else get off the job. If he "knocks" he will get into trouble with both the boss and the other men. The picture shown presents

a group of plumbers and steamfitters that worked on a certain large building in "Dixie" only a few years ago and at the time this job was done it was desired to crowd the work as rapidly as possible because the time was drawing near when the building was to be used.

Now this was a "time job" and, although the men had never been directed to hold back the work, they had done so and had not been called down for doing it. Consequently they knew pretty well just about how the land lay and when the order came to push things they did not take it in the best of humor as some of them had figured on holding out on this work until the spring months.

Some of the men got decidedly "grouchy" on being awakened from their after dinner "nap" in the attic and informed by the boss that they were hired to work and not to sleep on the job. That southern climate rather tends to slow one up and cause laziness anyway and being constantly disturbed got on their nerves.

But after a few were fired the rest got next to themselves and got a move on and the work went forward by jumps. Now a job taken on the "time and material" basis is all right, with an honest contractor, but taken by one who is tricky is one of the most unsatisfactory propositions that exists.

The foreman or contractor who insists that the work be thrown in regardless (only so that it be got in so that he can draw down the money on it) is making the mistake of his life.

He not only injures his own standing, but he does not give the men a fair show on the work. He also gets in the work in such shape that the chances are half of it or more will have to be done over, or a law suit will be the result. Generally the law suit comes anyway and all as the result of this mistaken policy.

Good work is never slipped into a job after that manner. To be sure one can plan rightly and save lots of time, but there is nothing whatever gained by cutting the threads only half up and just sticking them for a turn or two into the fittings as I have seen done many times so that the workman could cut more threads in a day. This is as ruinous a practice for the contractor as is the practice of making the work last by the workman.

So there are two bad practices which the apprentice should watch out for and  
(Continued on page 20.)



(Continued from page 18)  
developing the pattern as shown by fig. 3.

To get the opening in the pipe the easiest way for a problem of this kind, where the surface is large, is to take the end of the pipe after the mitre is cut, place it against the surface of the cone, mark where it butts and cut out the opening, allowing a flange to turn up inside of the pipe for riveting if necessary.

To develop this pattern in the flat, however, we first draw a circle or part of a circle the size of the bottom of the pipe, see fig. 4, having the centre O directly below the centre P of fig. 1.

Then draw a horizontal line as O-R out to the edge of the circle.

Next draw the circle, fig. 5, which is the same as fig. 2, and is directly below fig. 2. Divide this off into the same number of spaces as fig. 2, and drop lines to the centre line O-R.

Now set the point of the compass at P, fig. 1, and the lead at S, and at any convenient place as K describe the arc N-M.

Draw the vertical line K-H, which represents the centre line S-P of fig. 1, directly over the centre line O-R, of fig. 4.

Now set the point of the compass at P, fig. 1, and the lead at B, and with K as centre describe an arc cutting the line K-H at B.

Then set the point at P, fig. 1, and the lead at 6, on the mitre line, and with K as centre describe the arc 6. Continue thus until all the points on the line P-S of fig. 1 have been transferred to the line K-H of fig. 6.

This gives us the length of the opening. What we want to get now is the width at the different points.

Set one point of the dividers at point 4, fig. 5, and the other on the centre line, O-R, directly below it. Then lay this distance off on either side of the line, K-H, on the arc, No. 4, which gives the width of the opening in the side of the line, K-H, on the arc No. 4, which gives the width of the opening in the centre. In a like manner, get the width of the opening at each one of the other points. Then trace a line through these points and cut out opening.

Prob. 28 is of the same nature as prob. 27, and the student is required to develop this along the line of prob. 27. In this case we would recommend that he get the opening in the cone by butting the end of the pipe against the cone and marking around same.

Problems 29 and 30 represent two different methods of making sheet metal balls. Prob. 29 is known as the gore method, and Prob. 30 as the zone method.

To develop by the gore method we first draw a circle the size of the desired ball. Then step it off into any number of equal spaces according to the number of pieces we wish to make it from. Having the half of one of these spaces on either side of a vertical line dropped from the centre, as the space A-B.

Now project a horizontal line from the centre of the ball, as the line P-O, and drop a vertical line from this as O-S. Then with the compass set to the radius of the ball and with O as a centre, draw a quarter circle and divide it off into any number of small spaces (the smaller the spaces the more accurate will the pattern be).

Now draw horizontal lines from each one of these points until they meet the two mitre lines formed by lines drawn from the points A to B into the centre of the ball.

Now drop a vertical line from the centre of the ball, and lay out on this twice the stretchout of fig. 2, or one-half of the ball.

Draw the usual measurement lines and intersect these by lines drawn from the different points on the mitre lines.

The ball will look better if the pieces are slightly raised on the hammering block. In cutting out the ball it is well to allow a small flange, which should be formed to the shape shown by fig. 2. This allows the edges to butt together, as shown by fig. 5.

Cut out a small circle as fig. 6, and fit this over the ends of the gores after the ball is put together, as this renders it more solid. If the ball is to stand any strain then put a disc through the centre.

To develop a ball by zones, first draw the circle fig. 1. Divide half of it off into the desired number of sections as shown. Project a vertical line through the centre of the ball as O-P.

Now draw a line from 1 to 2, fig. 1, and project it until it meets the centre O-P, as at the point S.

Then draw a line from 2 to 3, and project it until it meets the centre line, as at H.

These lines represent the radii for developing the zones A and B.

These zones are merely frustrums of a cone, or are like the sides of pails, each one getting gradually smaller, the more zones, the more accurate the ball will be.

What we want to do now is to get the circumference around the bottom of each one of these zones or frustrums of cones, so we can develop the pattern for each one the same as we would develop the pattern for different size pails.

(To be continued)

## HOLIDAY TRADE.

(Continued from page 11)

difficult to call peoples' attention to these fixtures. Interest in them is aroused very quickly, and when displayed they practically sell themselves.

### Arrest the Attention.

The most important point with regard to the Xmas trade is the arresting the attention and arousing the interest of the people. Many plumbers overlook this and think that to gain trade it is not necessary to make their stores attractive. But just as long as the store keeps a dingy, unkept appearance and as long as articles are put in the window merely to keep it from looking empty and not for making a display, so long will the plumber lose his chance for a share in the Christmas trade.

A general cleaning up should be begun now. Articles which are in small demand at this season should be placed in the rear part of the store, and those which are best adapted for Christmas gifts brought to the front. Now is the time for window displays. Let the people see those articles which are new, attractive and most seasonable, and not those which have been known to be handled by plumbers for years. Feature those articles which will add to the convenience and comfort of the home. Create a desire for such things. If the people have never seen these articles or how they are to be used, how can they feel the need of them?

Plumbers, it's up to you to educate the people. Now is the time to begin. You need your share of the Christmas profit. Then get busy.



## TIPS FOR HELPERS.

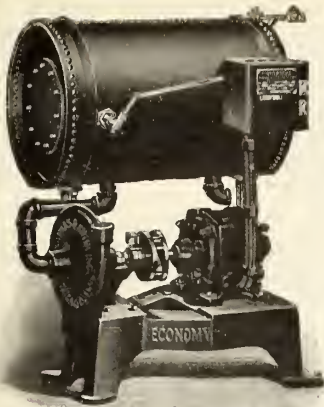
(Continued from page 19.)

avoid if he desires to form habits which will be a credit to himself as he goes out into the field.

In the first place endeavor to give an honest day's work for the wages paid. That don't mean that you would do as much for \$3 a day as you would for \$6, and the contractor who expects it simply don't know human nature.

Secondly, unless I were very hard up, I would not work for a man who instructed me to loaf on a job. It is dishonest and a disgrace to the business. In the next place I would leave a contractor that stood over me every moment and howled because things were not moving fast enough to suit him. If the was not bright enough to figure the job at a profit which would allow a reasonable degree of speed I would let him get out of the difficulty as best he might. Good business practices and a little common sense will adjust both of the practices mentioned.





**Economy Automatic Condensation Pump and Receiver**

An expansion tank, an automatic switch and a centrifugal pump automatically operated by an electric motor. Stimulates circulation by drawing condensation through system, venting the air and returning the water to the boiler at high temperature.

Eliminates snapping and cracking in the radiators and pipes.

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A great saver of fuel.

Requires no attention other than an occasional oiling.

Operates equally well on high or low pressure systems.

Tell us your troubles and we will advise you how to overcome them.

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They Assure a Quick Turnover  
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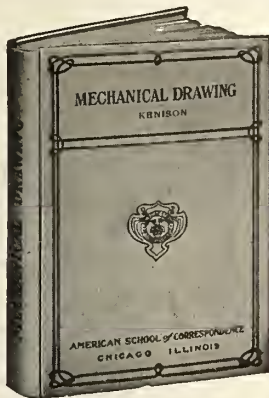
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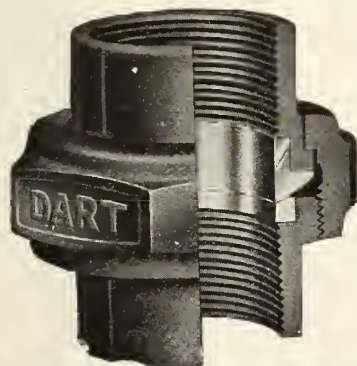
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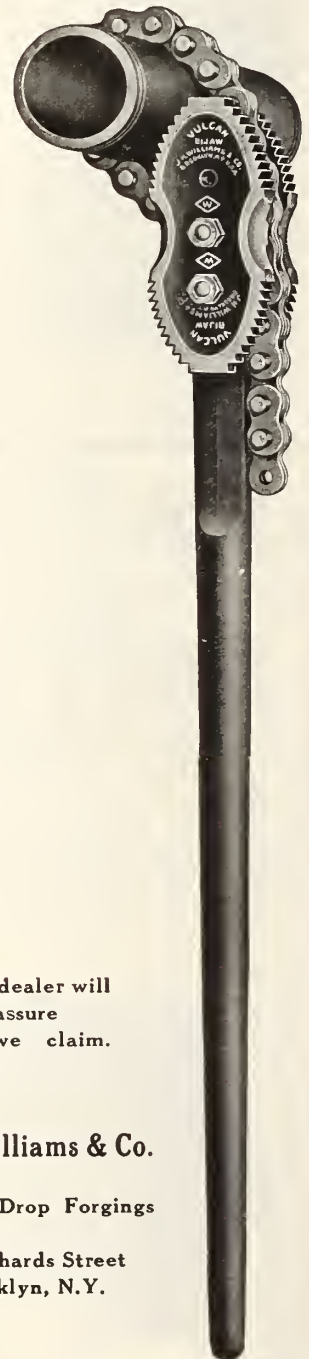
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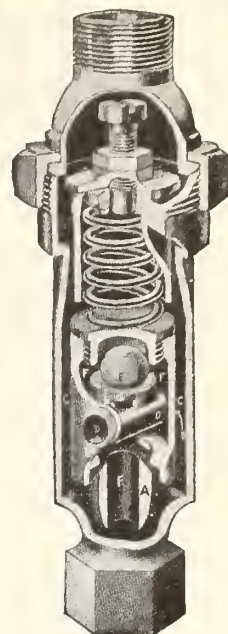
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See Sweet's Index, Pages 1139, 1140, 1141.



Hot Water Quick Opening Radiator Valve.

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Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

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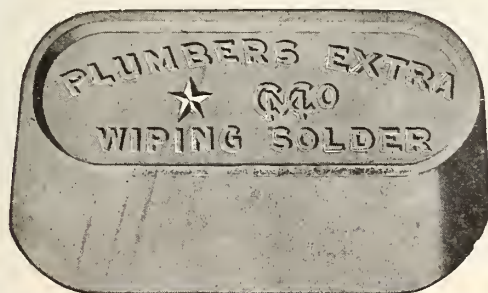
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## THE BEAVER



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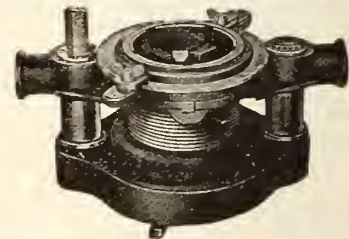
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Ask any user—he is the man who will tell you what real die stock service is.

The "Beaver" can be easily operated by one man and contains a set of dies which can be used to cut four different threads—a twist of the wrist sets the size.

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No. 41 Beaver 2 1/2 to 4 inch.  
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Where clients demand the best, you can safely recommend the

# SPENCER STEAM OR HOT WATER HEATER

Because—

**It reduces heating cost**

by using No. 1 Buckwheat Hard Coal at a saving of \$2 to \$3 per ton or more.

**It needs coaling but once or twice a day**

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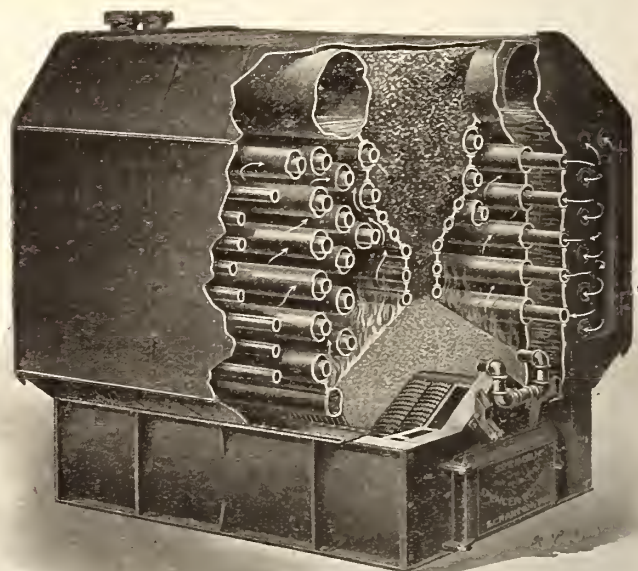
a combination of the water tube and return tubular systems.

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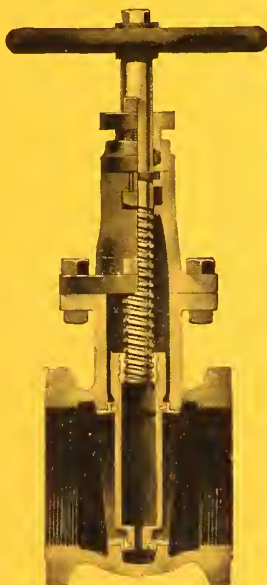


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No. 23

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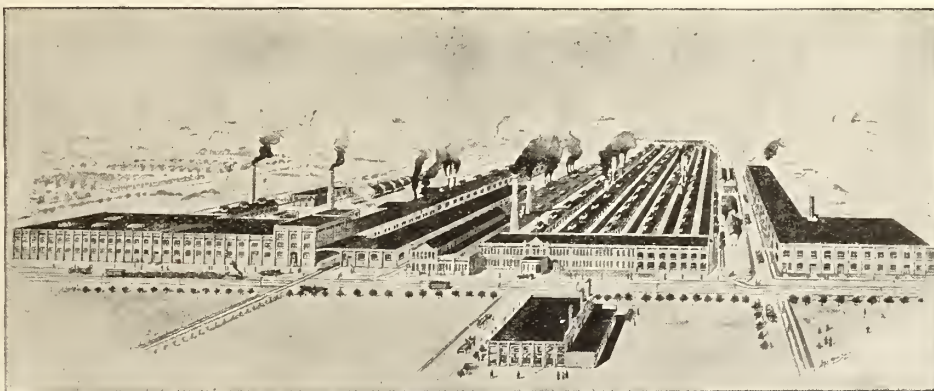
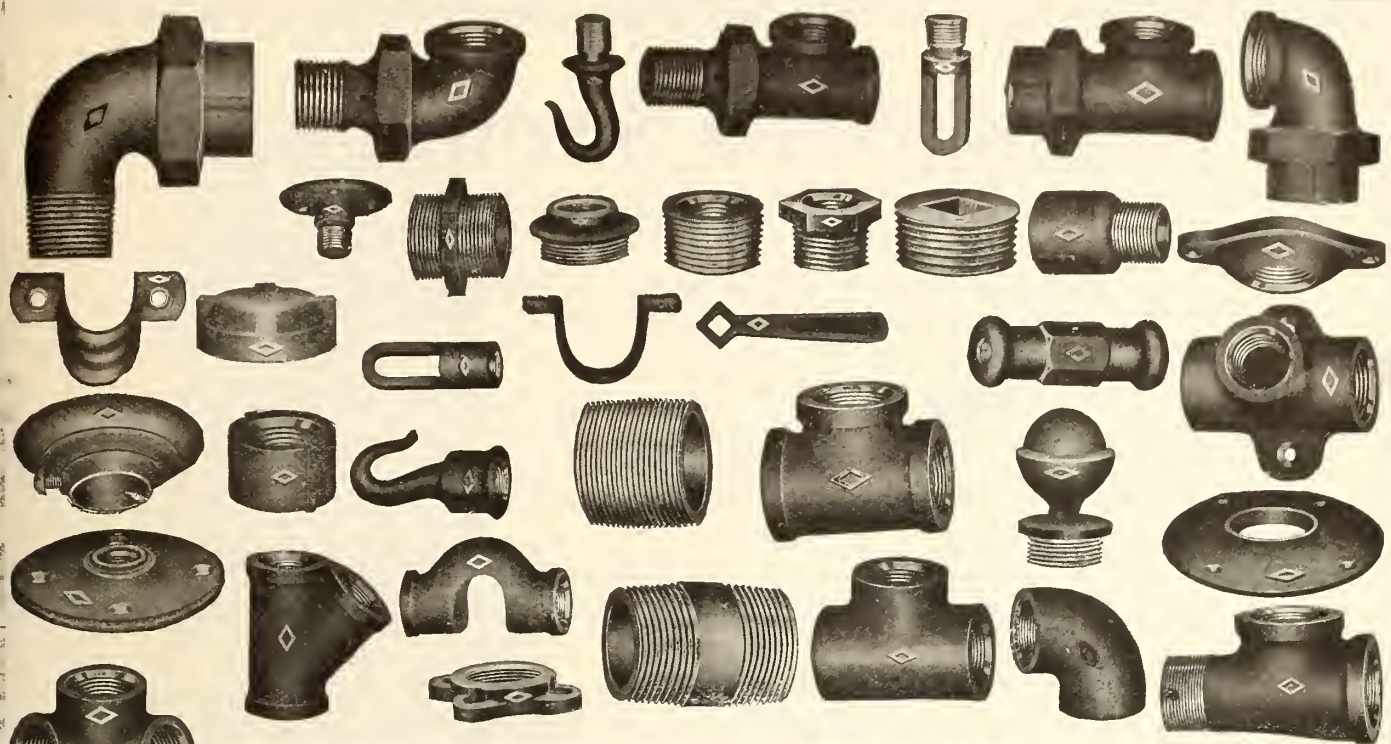
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## **“Bristol” Pattern Bath**

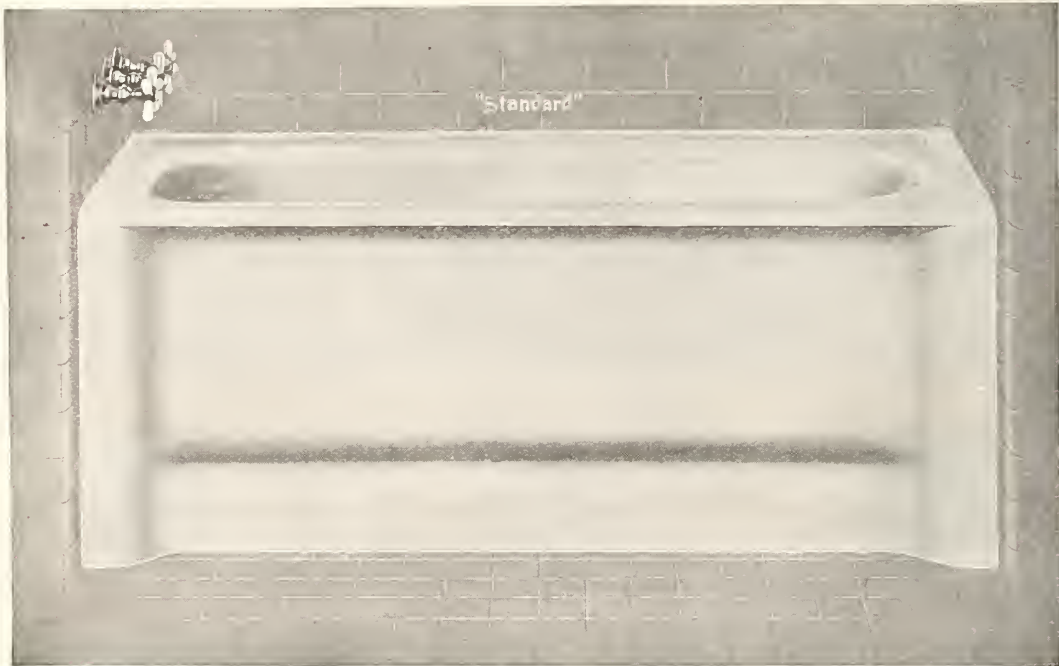
In many bathrooms, especially in hotels and apartments, where all of the space must be utilized to prevent crowding, a recess bath is sometimes the only fixture that can be used to advantage.

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**“Bristol”—Plate P-2355 J.**

“Standard Sanitary” Porcelain Enameled Bristol Pattern Recess Bath with slope end, with left hand end outlet and 3-inch roll rim; fitted with P-10022 “Imperial” Bottom Bell Supply and Waste Fitting, 3/4-inch Supply Pipes, Compression Valves, China Cross Handles with Indexes and Indexed China Cross Handle Waste.

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## A Boiler That Will Increase Your TRADE

Every progressive plumber should investigate the selling qualities of this boiler.

It is the result of over 50 years of careful study of the hot water system of heating. Many exhaustive tests were made before the perfected boiler was placed on the market.

The "Daisy" Boiler is giving the Best of Service in over 50,000 buildings throughout Canada.

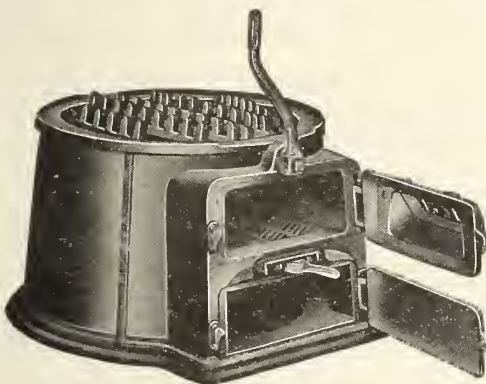
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

The Ash Pit is large and roomy, with a wide door, so that the ashes may be easily removed.

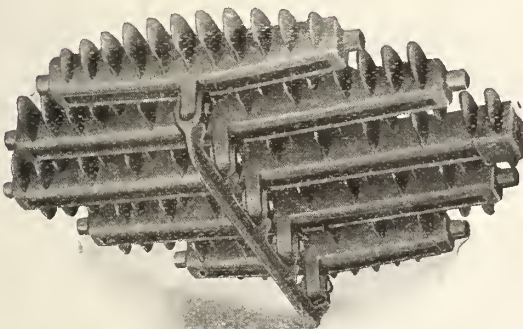
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

The Daisy is a guarantee of efficiency and durability.



DEEP BASE OF DAISY HOT WATER BOILER,  
SHOWING ASH SIFTER AND GRATE



THE GRATE

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All these points have been realized and proven by years of trial and thousands of plants in use in all countries.

Each feature combines to make the Honeywell the favorite method with house owners and the one generously and generally specified by far-seeing architects and heating contractors.

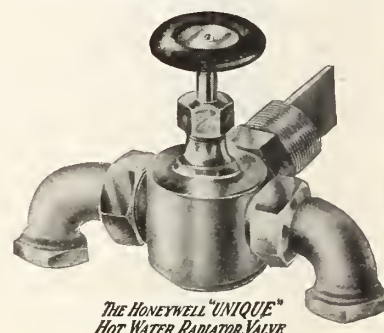
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## Honeywell Heating Specialty Company

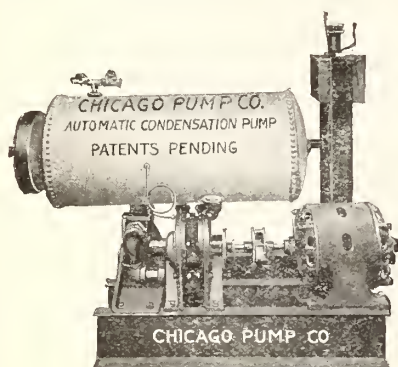
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Phone Main 4615



THE HONEYWELL "UNIQUE"  
HOT WATER RADIATOR VALVE



To Messrs. Plumber, Steamfitter and Company

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You want to make money, don't you? Let us show you how! Push the sale of our AUTOMATIC ELECTRIC CONDENSATION PUMP.

You are surrounded by buildings in which are old, ineffective HEATING SYSTEMS. Our pump can be connected to the system in a remarkably short time, and at once makes it efficient. Our pump operates equally as well on a new Heating System as on an old one, and SAVES 20-50% COAL, and much firing labor. SAVES Digging a Boiler Pit.

We are the only manufacturers of the PATENT AUTOMATIC TILTING TANK RECEIVER, which contains no float or mechanism whatever.

No danger of WATER-LOGGED FLOATS, FAILING FLOAT MECHANISM, or LEAKING TANKS when Float-arm packing wears.

Send us a Post-card for literature.

DON'T PASS UP THIS OPPORTUNITY.

**CHICAGO PUMP CO., 904 W. Lake St. CHICAGO, ILL.**

## Mechanical Drawing

By Ervin Kenison, S.B.

Instructor in Mechanical Drawing, Massachusetts Institute of Technology

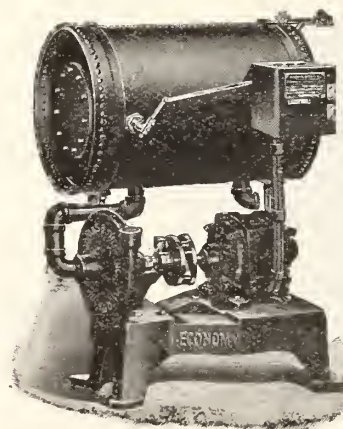
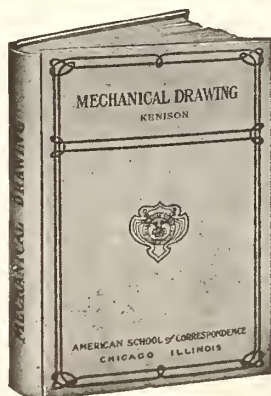
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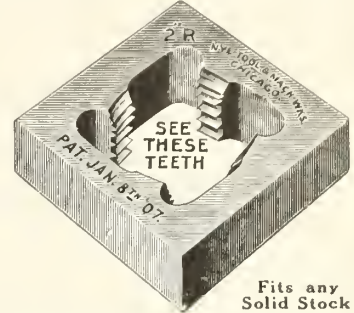
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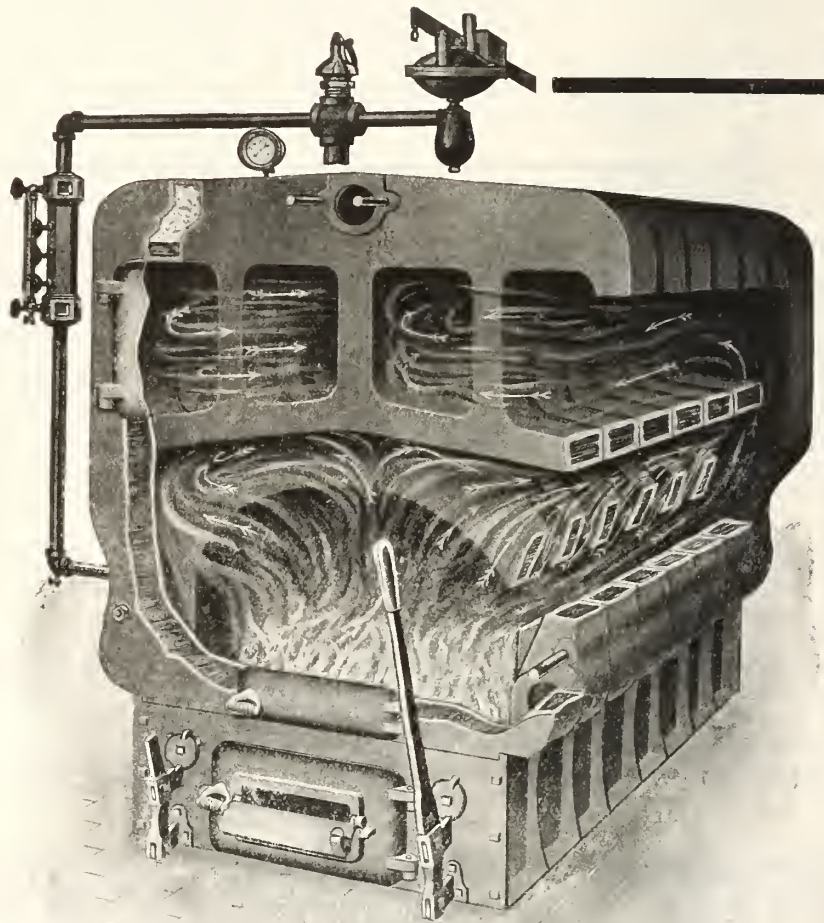
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# To Aid in Getting of Information

Numbers of Ontario Society Have Been Selected to Act in Conjunction With Medical Health Officers Appointed by the Ontario Government—The Object of the Work.

THE Ontario Society of Domestic Sanitary and Heating Engineers show that they are a live body by the action which they have recently taken in connection with provincial sanitation. The provincial board of health has divided Ontario into seven districts to be covered by seven district health officers who will make a general sanitary survey of the province. Every village, town and city in Ontario with the exception of centres of over fifty thousand population is to be covered by these officers and careful examination is to be made of water supply, sewage and drainage in each.

The Ontario Society of Domestic Sanitary and Heating Engineers recognize the fact that their numbers may be of very great assistance in making this sanitary survey, and so have appointed seven sanitary and heating engineers to cover districts corresponding with the districts of the health officers and to work in conjunction with the health officers.

The district officers appointed are as follows:

District No. 1. Counties of Essex, Elgin, Kent, Lambton, Middlesex and Oxford, with headquarters at London—Dr. David Benjamin Bentley, of Sarnia.

District No. 2. Counties of Bruce, Dufferin, Grey, Huron, Perth, Wellington and Waterloo, with headquarters at Palmerston.—Dr. Thos. Jas. McNally, of Owen Sound.

District No. 3. Counties of Brant, Haldimand, Halton, Lincoln, Peel, Norfolk, Welland, Wentworth and York, with headquarters at Hamilton.—Dr. Daniel Alexander McClenahan, of Waterdown.

District No. 4. Counties of Ontario, Durham, Northumberland, Prince Edward, Hastings, Peterboro', Victoria, Muskoka and Simcoe, with headquarters at Peterboro'.—Dr. George Clinton, of Belleville.

District No. 5. Counties of Lennox and Addington, Frontenac, Leeds, Grenville, Stormont, Dundas, Glengarry, Prescott, Russell, Carleton, Lanark and Renfrew, with headquarters at Kingston.—Dr. Paul J. Moloney, of Cornwall.

District No. 6. Districts of Parry Sound, Nipissing, Temiskaming and Sudbury, with headquarters at North Bay.—Dr. C. E. George, of North Bay.

District No. 7. Districts of Manitoulin, Algoma, Kenora, Thunder Bay and

Rainy River, with headquarters at Fort William.—Dr. Robt. E. Wodehouse, of Fort William.

## Sanitary Engineers Appointed.

To work in conjunction with these health officers, and cover the same districts, the following sanitary and heating engineers have been appointed:

District No. 1. E. H. Russell, of London.

District No. 2. H. Mahoney, of Guelph.

District No. 3. W. Brittain, of Hamilton.

District No. 4. R. G. Sturgeon, of Peterboro'.

District No. 5. Geo. Ross, of Brockville.

District No. 6. S. A. Cherry, of North Bay.

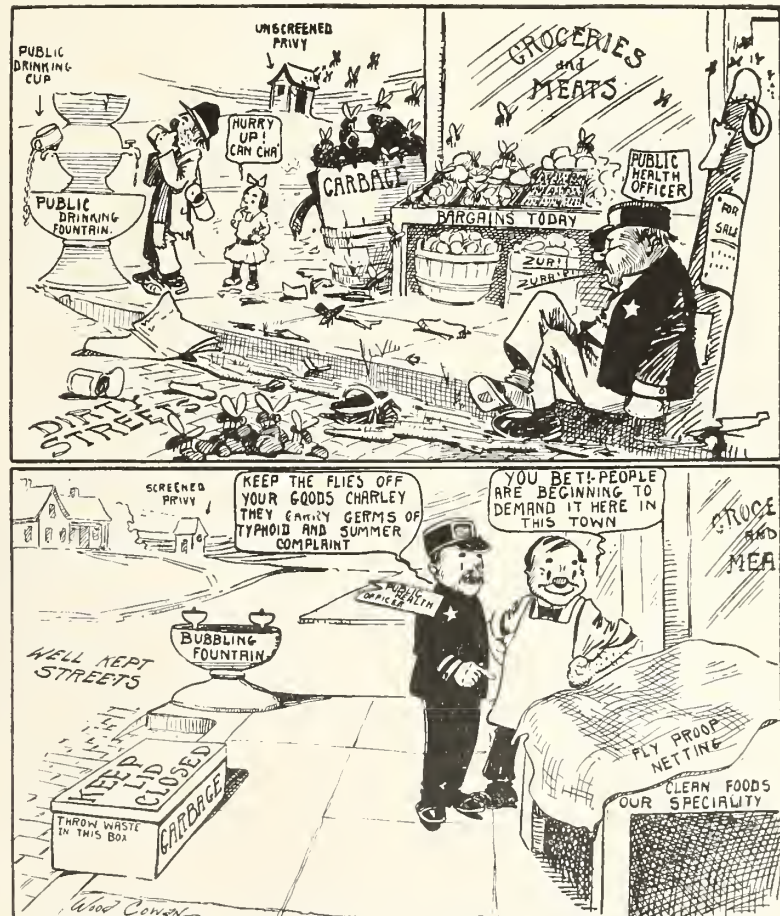
District No. 7. A. C. Waltz, of Port Arthur.

Of these, three also hold offices in the Ontario Society of Domestic Sanitary and Heating Engineers. Mr. Sturgeon is chairman of the Sanitary Committee, and Mr. Brittain, chairman of the Apprenticeship Committee.

The work to be undertaken by these

men covers a very great range. It will be the duty of the district health officers to examine the source from which the people of each municipality get their water; to go thoroughly into the system of sewage and drainage; to ascertain whether the water supply is being contaminated and if so, in what way; to find out whether sewage is acting as a source of danger at any point or whether the water is being contaminated from other sources altogether; and to determine whether sewage from one municipality is in any way effecting the water supply for another municipality drawing its water from the same original source.

In order to accomplish this labor a very thorough knowledge of the different systems involved will be necessary. Many points will crop up which will cause hesitation and doubt on the part of the health officers. It is here that the practical technical knowledge of the sanitary and heating engineer will be of value. The sanitary engineer under-



Comparative conditions in the same town before and after the united efforts of doctors and sanitary engineers.



stands these systems in a way in which health officers can scarcely be expected to understand them. He knows the different values of different classes of material, understands how they are installed, how they act and everything about them. This is the first time that a sanitary survey of any kind has been attempted. Conditions will be found in existence in some places which, to say the least, were never expected. The practical knowledge of the sanitary engineer will be of very great value when it comes to advocating what steps should be taken to better and perfect conditions and, being continually in touch with the district health officer, he will exert very great influence. The position then of these sanitary and heating engineers is that of advisors. With them the health officers discuss their difficulties, to them they lay bare the faulty and imperfect systems of water works, drainage and sewage and to them they go when wishing advice of a sound practical nature.

Time and labor will be given free; railroad and hotel expenses alone being covered. The reward to be reaped at the present time is small. But through their labors it is hoped that conditions throughout the country will be bettered; that education of correct sanitary systems will be scattered more widely and thus in an indirect manner greater rewards will be gained by sanitary engineers everywhere. The immediate reward will of necessity be comparatively small, but through a more thorough knowledge of up-to-date sanitary conditions on the part of the people of Ontario as a whole, sanitary engineers are looking forward to increased gains in the future.

The work undertaken is one of very great importance. As stated above, this is the first time that such a labor has been attempted. The Ontario Society of Domestic Sanitary and Heating Engineers have come to the front and are taking a very active part in advancing this movement. It is to be hoped that much will be accomplished through their efforts.

## IMPORTANT CONSOLIDATION.

The purchase of the Ideal Manufacturing Co., of Detroit, Mich., by the Colwell Lead Co., of New York City is one of the largest transactions affecting industrial property which has recently been put through in Detroit. Final arrangements have recently been completed by the Detroit Trust Co., by which the Windsor plant of the Ideal Manufacturing Co. has also been included.

Upon the death of the late Jas. N. Wright, who was president of the Ideal

Manufacturing Co., the supervision and management of the company fell upon Jeremiah Dwyer and members of his family who hold controlling interests. But owing to the large interests which the Dwyers held in other industries, they found it impossible to devote to the Ideal Manufacturing Co. the attention which it demanded. Two courses were then open, either to sell their holdings altogether or else to combine the Ideal Manufacturing Co. with some other concern in the same line of business.

Consolidation with the Colwell Lead Co. shows which of these plans was adopted. The new management proposes to greatly increase the production of the Detroit plant and also to establish a jobbing house in Detroit to handle all plumbing fixtures and supplies.

Both companies are old and well known manufacturing concerns, and have each met with much success. It is believed that the members of the new directorate are such as to assure continuance of this success which the two companies have each enjoyed in the past.

## MODEL PLUMBING—HOW IT WAS IMPROVED.

The accompanying illustration is one showing conditions as they were actually found by a master plumber in the city of Toronto only a few days ago. Note the way in which the waste from the bath tub was connected.

With conditions as illustrated the bath room continually reeked of sewer gas. The explanation, of course, was very simple as soon as the different connections were laid bare. Upon the closet being flushed, the trap below the bath tub was syphoned out, thus allow-

ing all sewer gas to pass up into the bath room unchecked.

To remedy matters the waste pipe from the bath tub was connected by a 4x2 inch Y into the soil pipe stack at the point illustrated, and to prevent the trap again being syphoned a vent was run from the waste into the stack at a point slightly higher than the level of the bowl. In this way the difficulty was overcome and the odor of sewer gas finally removed from the bath room.

## BUILDING PURCHASED.

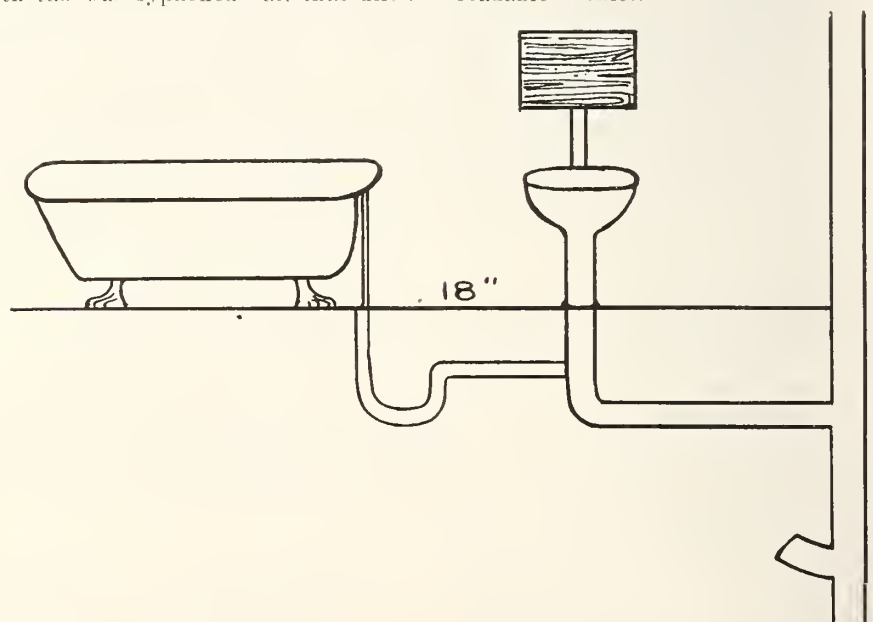
A building site of 50,000 square feet just outside the southern limits of Edmonton, Alta., has recently been purchased by the Presto Heater Co., of Alberta. A new manufacturing plant devoted to the manufacture of hot water and steam heaters will be erected on the site early in 1913. The plant is estimated as costing in the neighborhood of \$50,000.

The company will also erect a modern machine shop, and intend later to manufacture radiators and accessories for the various systems of heating. In taking out their charter, care was taken to have this privilege included.

The officers of the Edmonton Company are: Manager, P. E. Lessard; vice-president, W. A. Aubin; secretary-treasurer, J. E. Bertrand; and directors A. Boileau and J. W. Mould.

## TURBINE EJECTOR PUMP.

The Fischer Sweeney Bronze Co., of Hoboken, N.J., have sent out to the trade a small booklet on their Turbine Ejector Pump. An excellent cut of the pump is given. Descriptions of type "WH" for air line systems and type "W" for return line systems along with the advantages of the pump form a very readable booklet.



# The Purposes of Trade Organization

A Forceful Expounding of What Organization Means to the Sanitary Trade,  
by Lewis LeGrow, President of the Ontario Society of Domestic Sanitary and  
Heating Engineers.

To all men engaged in the Sanitary and Heating Work of Ontario:

Say not,—What is the cause that the former days were better than these? For thou dost not enquire wisely concerning them. How many of us are longing for the good old days, when a plumber was a plumber; when he lived a plumber and died a plumber; when his accounts were seldom paid without protest, the butt of the funny man and a nuisance to the public who had to engage him, whose work, like that of the doctor's, they always buried? No incentive in his work and no appreciation of his work, no personality, nothing to make his business attractive or to illuminate his life. The question of his relationship to law and order, the question of control over him, the recognition by him of municipal by-laws, Provincial or Dominion laws governing the method of how his work should be done and what kind of material should be used, was as dark and slimy as the cave man's. No ray of light had crossed his brow, and contentment with what was, were his characteristics.

But improved conditions had not entered twenty-five years ago, and what was true of the plumber was also true of the people with whom he lived and worked. Twenty-five years ago there was scarcely a law governing the construction of sanitary appliances; scarcely a sanitarian who thought of his responsibility to the people and his obligations to them; scarcely a people but would sooner have a bright paper on the wall than a clean and sanitary fixture in the bathroom. Truly the sanitarians owe the peoples of the city and country for past due sanitary education.

To what extent are we responsible for crime, sin, disease, alcoholic excess, physical decay, impure air and unwholesome surroundings? Are we being a party to cheapness and rush? Do we tie ourselves up with unprincipled men who would give to their tenants and others anything but the best, who would have us do work that we know is not healthful, but, from a desire to stand in and make temporary money, we accept the bait when it should be our privilege to explain to this man (who is very often ignorant of sanitary construction) the advantages of good material and good work and the satisfaction that should come to him by having his work properly done?

What an evolution of national and individual thought! We think no more of self-preservation. We know that if we try to save our life we shall lose it. The lesson has been hard to learn, but it is growing in us, and almost unconsciously we are acting on it. What is the new thought? It has always been with us, but for lack of individual inspiration we did not discover it sooner, or maybe it was not necessary before. The present method of living in cities forces on us tenement houses and slum conditions, restricting air space, economic conditions depending one on another, closely allied in all respects. The lines of demarcation not so easily distinguished as between classes. The thought that man is an associate being; the necessity for social service, has forcibly presented itself and will not down by any argument until we make it part of us and do its will; until we recognize the present day tendencies and thought must be directed towards the relieving of conditions that are in opposition to human beings living and working under the most helpful conditions. Civilization means that man will overcome every opposition, and the objections raised by considerate men of business and philanthropists to any suggestions by this City's Health Department, that a better class of material should be used underground inside the walls of any building, show that the law of sanitary cleanliness has not presented itself to their minds strongly enough to overcome past prejudices.

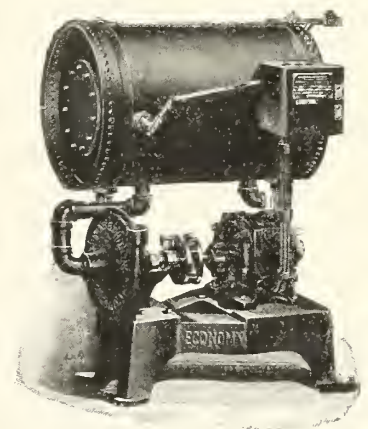
Now for what reason should men engaged in the sanitary business be organized? Some of us say, for better financial returns; others, for the better to dig out all weeds of poor pay; others, for the social consideration and advancements that come to men of like occupation; others, for the educational advantages; others, declare for self-preservation; and an element of truth is contained in all of these and many others. But the fundamental basis of organized professions should be the concentration of energy, the fusing of knowledge, the centralizing of personality that the organizations should radiate, the thought that our relationship to the public is of supreme importance, that we should lead in sanitary construction and supply information; and the main thought should be the advancement of a standard of comfort and op-

position to impure conditions, the installation of the best class of material and the training of men who will grasp the significance of their calling and who will show that better work can be done by association with others than by living to themselves.

E. Lewis Le Grow.

## CONDENSATION PUMP.

Thomas & Smith, of Chicago, Ill., have now perfected their automatic condensation pump and receiver and have introduced it to the trade under the name of the "Economy." In the "Economy" the trade is provided with a pump with electric motor drive for returning the condensation from radiation placed below the water line of the boiler. The return line is brought into the receiving tank at the point where the ell is shown and the condensation flowing by gravity into the tank



raises a float which operates an automatic switch enclosed in the steel cabinet shown on the outside of the tank. This switch controls the operation of the motor and pump.

The float is set so that at no time all of the condensation is pumped out of the tank and as both the return line, and the connection to the pump are taken out of the bottom of the tank, it is impossible for the pump to lose its prime.

As the operation of the entire pump is automatic and the receiver small, the condensation is returned to the boiler very rapidly and at a high temperature.



# Plumber and Steamfitter

## and Metal Worker of Canada

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TORONTO, DECEMBER 2, 1912

### An Important Step

THE ACTION on the part of the Ontario Society of Domestic Sanitary and Heating Engineers in appointing representatives from their own numbers to work in conjunction with the Government district health officers is one to which very great importance is attached. The health officers, while well enough up in rules of health, sanitary and non-sanitary conditions and methods and installations employed in the various municipalities of the province, have at best a knowledge of a more or less theoretical nature in regard to some phase. But now there is provided for them advice and aid of a highly practical nature coming from the most up-to-date and go-ahead sanitary and heating engineers of Ontario. The importance of this cannot be passed over lightly. The district health officers have been given very wide authority. Any recommendation made by them will doubtless carry very great weight. How much more valuable, then, that they should be provided with the means of securing information of a practical technical nature at first hand?

That is only one side of the question. There are also to be considered the advantages which the association will reap from the work of their own members in connection with the doctors. There is no doubt that much poor work has been done on installations of various kinds in the past. Materials used have perhaps not been the ones best adapted to the work they are called upon to perform. Through the working together of the sanitary engineers and the doctors the best influence which the trade has to offer will be spread over the country. Not only will the smaller plumbers reap the advantages of this directly alone but, through the general public becoming better educated to proper sanitary conditions, will also reap the benefits indirectly. Much greater opportunity is given

the association to extend any influence which it may have and to recommend the introduction and use of any new systems and methods which it deems advisable. Just what the exact result of the combine will be is hard to state, but there is great chance for both sides reaping tremendous benefit from it.



### Standard Prices

THE TRADE should strive to establish standard prices as far as conditions allow. In every other trade, a basis of price standardization has been reached. In Winnipeg, in Vancouver, in Montreal, in any city in fact, prices for foodstuffs will be practically the same in all stores. There are prices on staple lines in all trades which are quoted wherever you go—prices which have become standard through expediency and usage. Why does not the same rule hold good in the sanitary and heating trade?

If you go to six sanitary engineers and ask for figures on a job, the whole six may figure the material differently. This is not as it should be. There should be a standard price for each article which members of the trade would always quote and which the public would learn to expect and figure on. We do not mean to imply that there should be an understanding in the trade that high prices should be fixed and maintained. The only feasible method would be to determine a fair price—fair to the trade and public alike—and then maintain that price.

Such a system would eliminate the promiscuous price cutting which has become so general and which has resulted not only in the failure of so many firms but in the carrying out of a great deal of cheap work as well. The public interests would be conserved equally with the best interests of the trade, if prices could be put on a standard basis in different localities.

# Plumbers Condemn Percentage System

THE more or less frequent use of the percentage system adopted for large plumbing and heating contracts, says "Domestic Engineering," has brought in its wake some evils that have made necessary official action among local associations.

One of the first local associations to put itself on record on this matter is the Merchant Plumbers' Association of Los Angeles, Cal., which at its meeting on October 28th, 1912, adopted the following resolutions:

Whereas, It has become a common occurrence for persons engaged in the plumbing business in this city and in other cities, to undertake to instal the plumbing, steamfitting, etc., in buildings under agreements known as the "Percentage" plan, whereby they agree to do the work for some stated and certain percentage of profit added to the actual amount which it costs them in labor and material to instal the work, and further agree to furnish, or to have furnished to those for whom the work is done, bills and statements, and other evidence showing what the true cost in labor and material has been, and,

Whereas, According to common rumor and according to admissions made by some of those doing "Percentage" work, the percentage agreed upon is, in some cases, so extremely and ridiculously low, that it must be impossible for those doing the work to make sufficient profit to meet even their overhead expenses, provided they observe the terms of their agreements, and,

Whereas, There are good and sufficient reasons for believing that, finding it impossible to profitably and at the same time honestly conduct their businesses on extremely and ridiculously low margins of profit, some of those doing "Percentage" work take advantage of the ignorance and stupidity of their customers, and resort, at times, to various dishonest and unscrupulous practices in order to avoid actual loss on this class of work—such as conniving with dealers in plumbing supplies, or the employes of such dealers, to the end that the bills rendered by the dealers for materials used in the work and which are supposed to indicate the actual net cost of these materials to the plumber, are made out to show as being cost prices, prices that are really in excess of the true cost, and all with the object in view of securing a greater profit than the terms of the agreements

legally permit; or, intimidation of underpaid and unskilled Journeymen Plumbers and Apprentices to the end that they will declare they are receiving a certain rate of wages, when in reality their wages are much lower, and all with the object of securing in this way a greater profit than is legally permitted by the terms of the agreements; or, having certain materials delivered to and charged against "Percentage" jobs, and then surreptitiously removing such materials with the object in view of securing greater profits on the work by collecting for material not needed or used in the work, and,

Whereas, any person guilty of any of the fraudulent practices hereinbefore mentioned is liable to legal prosecution, both criminal and civil, and,

Whereas, The Merchant Plumbers' Association of Los Angeles, as an organization, realizes that dishonest and unscrupulous practices on the part of any of those engaged in the plumbing business, whether members of the association or not, has a strong tendency to bring discredit in a general way upon all engaged in said business, and it is therefore

Resolved, That this organization, The Merchant Plumbers' Association of Los Angeles, condemns the use of any and all dishonest practices on the part of those engaged in business; and it is further

Resolved, That this organization suggests to its members that they observe the spirit and intent of the following recommendations, to-wit: When asked to do work on the "Percentage" plan, to agree to do such work only at a percentage of profit that will justify them in dealing honestly by their customers and at the same time enable them to secure a living profit for themselves, but whenever possible, to try to secure their work by contract, or time and material agreements instead of by percentage agreements, assuming under conditions, the full responsibility for the completion of their work and for the quality of the material and workmanship required, and used, and when rendering bills for any and all kinds of work, to be certain that such bills are made out in a true and correct manner and thereby avoid just complaints on the part of their customers.

And it is Further Resolved, That this Association most heartily commends the Central Supply Association for adopt-

ing at its meeting in Atlantic City, in July, 1912, the resolution as follows:

"Whereas, members of this Association have been frequently requested by customers to furnish fictitious invoices for supplies sold, particularly where such customers have taken contracts on a percentage basis, and,

"Whereas, we do not believe that compliance with requests of this character is justifiable, either on the ground of good business policy or ethics; therefore, be it

"Resolved, That in the future we will absolutely decline to furnish any such invoices, and will only furnish regular bills or invoices applying to such purchases."



## WILL BLOCKING CURE THE RADIATOR?

Editor, Plumber and Steamfitter.—The third and fourth storey radiators on a riser line in a certain building seem to tip up on the end next to the valve. There is fully an inch space under the legs when the steam is on. Can I cure the job by putting small blocks under the radiator or legs?  
"179"

We should be inclined to believe that if you blocked under the legs that you would only bind the line so that it would pull up the main to make up the expansion and thus throw it out of pitch thereby making a trap in the line and inducing pounding. If you are not a steamfitter your best plan would be to call in one who knows his business and have him put in an expansion joint at about the middle of the riser line. This will take up the expansion in said line and allow the radiator to remain on the floor and at the same time the steam main in the cellar will not be pulled out of pitch as mentioned.—D. C. H.



## HEAT OF WIPING SOLDER.

Editor, Plumber and Steamfitter.—When the wiping solder is just about right for wiping a joint can you tell me how hot it is as shown by degrees?  
"49."

We find that it is stated to be about 626 degrees when it is used for wiping on lead. When at this heat no crust will be formed on the surface of the lead and the solder in the pot does not show any red color at all.—D. C. H.





# The Question Box



Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

## SUPPORTING DRAIN PIPES.

Editor Plumber and Steamfitter. — I have got to run some soil pipe in a building where it will not be possible to put

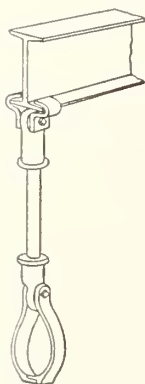


Fig. 1.

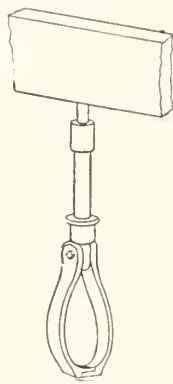


Fig. 2.

it under the floor. Now, will you please show me a secure pipe holder. I should like to see one that will do for wood beams and one also for iron.

Thos S. James.

In Figs. 1 and 2 we show pipe hangers which can be used for this purpose with the assurance that they will perform the service much more securely than hooks. They should be used at least as often as every ten feet.—D. C. H.

## RADIATOR VALVE THAT EVERYBODY CAN'T TURN.

Editor Plumber and Steamfitter.—In a school building that I have to put steam in can you suggest a radiator

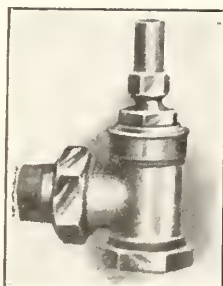


Fig. 3.

valve that the teachers cannot turn on and off at their own pleasure?

S. G. M.

You should use a valve of the kind known as the lock and shield valve, a

type of which we show in Fig. 3 of this issue.

## PLATE WARMING RADIATOR.

Editor Plumber and Steamfitter. — A customer of mine wants to know if I can put him in a radiator that will warm the dishes for the meals. Can you show a drawing or a picture of one that will do this?

J. Rodgers.

In response to our correspondent's wish we publish an illustration of such a radiator connected up for steam on the one pipe plan. This radiator can also be used for hot water by putting on a



Fig. 4.

return. It will be more effective if it is enclosed. We should prefer galvanized iron, painted, for this purpose.—D. C. H.

## WHAT IS MEANT BY "HARD" WATER?

Editor, Plumber and Steamfitter.—Very often one hears the expression "that water is too hard." Now, just what is meant by "hard" water

J. C. D.

When we speak of hardness in water we mean the power it has to neutralize the action of the soap, and is due to carbonates or sulphates of lime or magnesia in the water. Soft water contains no mineral impurities and rain water is the purest kind of natural soft water.—D. C. H.

## MANUFACTURE OF FITTINGS.

Editor, Plumber and Steamfitter.—Can you tell me if there are any soil pipe manufacturers that make a fitting

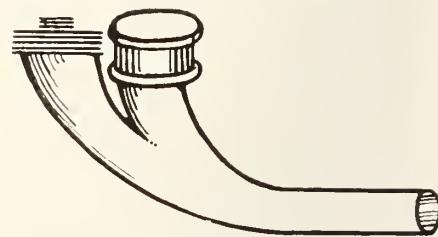


Fig. 1.

like Fig. 1 in one piece with clean-out screw made into it the same as Fig. 2. I have used fittings like Fig. 2, but I think the cross marked in Fig. 1 is the proper place for clean-out screw.

A. MacG.

We do not, at present writing, recall the name of any such manufacturer. It should not be a difficult job, however, to caulk the required 'clean-out into Fig. 1.—D. C. H.

## THAT LONG CONNECTION.

Editor Plumber and Steamfitter. — In the issue of your paper for Oct. 15th, page 9, the present year, you show a furnace at one end of a residence and a range boiler at the opposite end, and desire to know if it can be connected up and made to give proper results. The writer wishes to state that he has observed several such connections and that, when the pipes were reamed and given a proper slant (1 in. in 10 ft. is

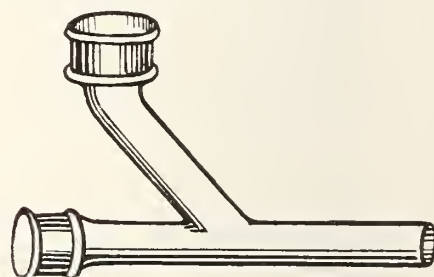


Fig. 2.

enough) the jobs worked all right. To be specific, one job was measured and it was found that the range boiler was located some 106 feet from the coil in the hot air furnace. In this case the

pipes were  $\frac{3}{4}$  in. in size and the coil in the firepot was 1 in. This job always supplied plenty of hot water and sometimes too much. It was found that by banking the fire in the furnace with pea coal that the water did not get so hot while the fire was held more uniform in the furnace and gave better heating results in the house. It was noticed that by banking the fire the furnace did not burn nearly so much fuel as when an unbanked fire was run.

J. E. G.

### IMPROVING HEATING SYSTEM.

Editor, Plumber and Steamfitter.—Find enclosed small sketch of a plumbing job that I propose to make some change in and would like your advice on same. I have tried to make it plain in sketch and will try and explain further in this letter. At present the boiler is in bathroom, upstairs, and connected to range in kitchen in the manner shown in sketch only the flow pipe enters boiler at the side marked with a cross in sketch and without radiator in the room below. At present the water-front gives more hot water than is required and also gets so hot that the owner has to let off hot water at times to stop it from boiling and the room in which I have placed radiator in sketch is not warm enough and the owner wants to know if a radiator could be used there to help heat the room and so use some of the heat that is being wasted by letting off the hot water as the radiator will be on the same level as range it is sometimes rather difficult to get a circulation. I have tried to show in my sketch how I thought of connecting up radiator as I thought if flow pipe

was carried up to top of boiler and brought down to radiator in manner shown, it would work, or would it be necessary to carry loop up higher than boiler. What do you think of this for a hook up and what would you advise? Any advice you will give me on this job will be gratefully received.

I might also say that I have been a constant reader of plumber and steamfitter for nearly five years and like it very much especially the question box as I have had some very useful tips from it and I think every young plumber (and old ones to) could read Plumber and Steamfitter and receive a great benefit. Wishing you every success and hoping to hear from you in your next issue of Plumber and Steamfitter, I remain, yours respectfully,

Wipe Joint B.

It seems more practical to put the entire circuit of hot water through the range boiler first, and the radiators second. We believe dividing at "Y" would rob the range boiler of too much heat.—D. C. H.

### STREET MAIN CONNECTION FROM STREET SERVICE.

Editor, Plumber and Steamfitter.—On taking the hot water from the main in the street to heat a house or building should the supply be taken from the side or the top of the main? Where should the return go into the main?

Standard.

If it is a system where the street line consists of one main, only, the house supply should be taken from the top of the street main and the return should go into the side of the pipe a couple of feet or more ahead of the place where

the supply is taken from. Where there is a separate return (two pipe system) it is also generally taken into the top of the return main; the supply also being taken from the top of the supply main.—D. C. H.

### SHOULD A GLOBE VALVE BE USED?

Editor, Plumber and Steamfitter.—There are a certain number of radiators connected to a steam main that it is desired to have so fixed that they can be shut off at times. The owner has an old globe valve that he insists on my using, stating that it will be "good enough." Would you advise me to use it on the job

John Parsons.

On general principles we should say use a gate valve rather than the globe valve. If you use the globe valve put it so that the handle stands out sidewise from the steam pipe. If you put it so that the handle stands vertically you will have a trapped pipe. The valve will be somewhat of an impediment do the best you can. Explain the matter fully to your customer and tell him that upon his head all the fault will come if the job does not work well. Then if he clings to his idea, why, go ahead and put in the job and if there is any trouble let him pay for whatever changes may be necessary. Some people learn only by hard knocks and may be your friend is one of that kind.—D. C. H.

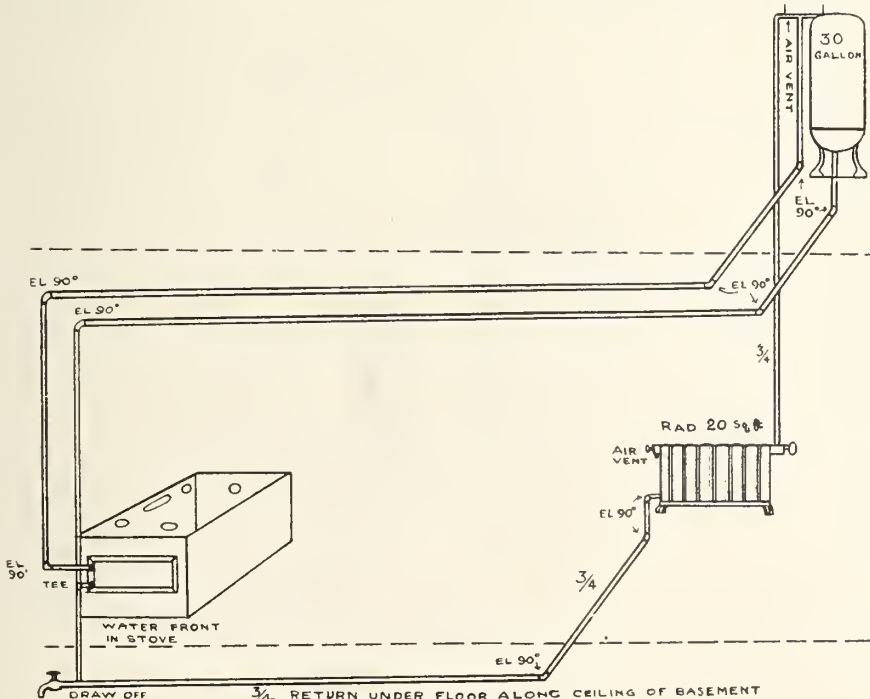
### LAVATORY REQUIREMENTS.

Editor, Plumber and Steamfitter.—Will you kindly tell me what you would consider some of the requirements for a good lavatory?

X. X.

We should require a smooth surface that would not chip, crack or become rough and collect dirt thus necessitating constant scrubbing; a large free outlet and an accessible overflow; perfect safety in wall connections and supply cocks that did not project very far into the bowl. It goes without saying nowadays that the lavatory should not be enclosed with any kind of woodwork, such a practice belonging to a past generation of plumbing practices.

We do not favor marble as it is too hard to keep clean and besides there is always a chance that through some accident the bowl or slab may get broken. At the best, unless great care be used, the bowl will tend to work loose from the slab and have to be fixed. It is not a very difficult matter to replace such a bowl, but why have it to do when other fixtures can be used that are not of that type?—D. C. H.





# A Forced Hot Water Heating System

Features of a Large Service Outlined—The Heating, Ventilation and Lighting of The Vanderbilt Model Tenements.

THE features of a large forced hot water heating system are described in the Heating and Ventilating Magazine by Richard Ruppell. The mechanical, ventilation, power and electrical plant for the Vanderbilt Model Tenements, better known as "The East River Homes," are taken up.

By referring to the master block

buildings, requiring the greatest consideration in the design, was the heating. There were two systems considered:

1. Overhead, one pipe, down-feed, two-pipe individual radiator connection, low pressure steam heating with a dry circuit return.

2. Forced hot water circulation heating on the overhead one-pipe, two-pipe

heating plant. This is largely accountable for by the fact that a better control of the heating in the apartments is obtainable to meet the varying temperature conditions, the greatest economy of this type of system being obtainable during the milder weather periods, when only a slight modulated heat is necessary. This, of course, became a decidedly important factor, when it is considered that the class of tenant occupying these apartments are in poor health and, therefore, the requisite heat to keep the apartments satisfactorily warm at all times is demanded.

(b) Hot water has the decided advantage over steam by permitting better heat control at the individual radiators.

(c) With the overhead system of hot water heating, no air valves giving off their obnoxious odors, thereby vitiating the air in the rooms, have to be contended with, which air valves in the case of steam heating have to be located in the individual rooms.

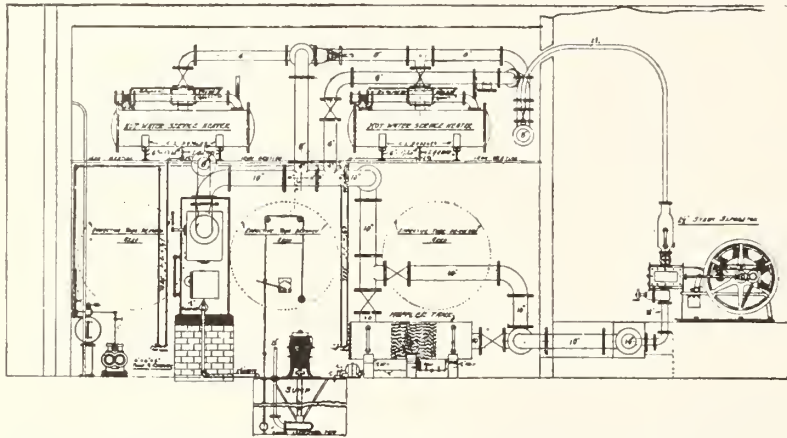
(d) With forced hot water circulation the piping can be materially reduced and run irrespective of grade and levels.

(e) No water hammer or air pocketed radiators has to be contended with.

(f) Absolutely positive circulation by means of a circulating pump.

(g) No excessive back pressure which represents a considerable amount of power wasted in the average combination power and heating plant.

On the other hand, it must not be overlooked that a steam system has the



Section through engine and boiler rooms at E-F, looking west.

plan, the general location and extent of these buildings can be ascertained. In reality there are four buildings operated and controlled from one central plant. This plant is situated underneath the main court.

Perhaps it might not be amiss, for the reader's information, to state that these buildings house in all 385 families, an apartment consisting of anywhere from two to five rooms and bath, and costing approximately \$3.20 a week for two rooms and a bath; \$4.20 for three rooms and a bath; and \$5.30 for four rooms and a bath.

The buildings were built primarily to provide living accommodation of the highest sanitary character in every detail, and principally for those unfortunate families, a member of whom is afflicted with tuberculosis. Naturally these conditions largely influenced the design of the mechanical equipment which, through the generosity of Mrs. William K. Vanderbilt, was made possible.

It is needless to say that these buildings have proven their worth when it is considered that there is an occupancy of over 80 per cent. in a little less than nine months, and when it is considered that a great deal of judgment is exercised on the part of the executives in the final selection of tenants.

## Heating.

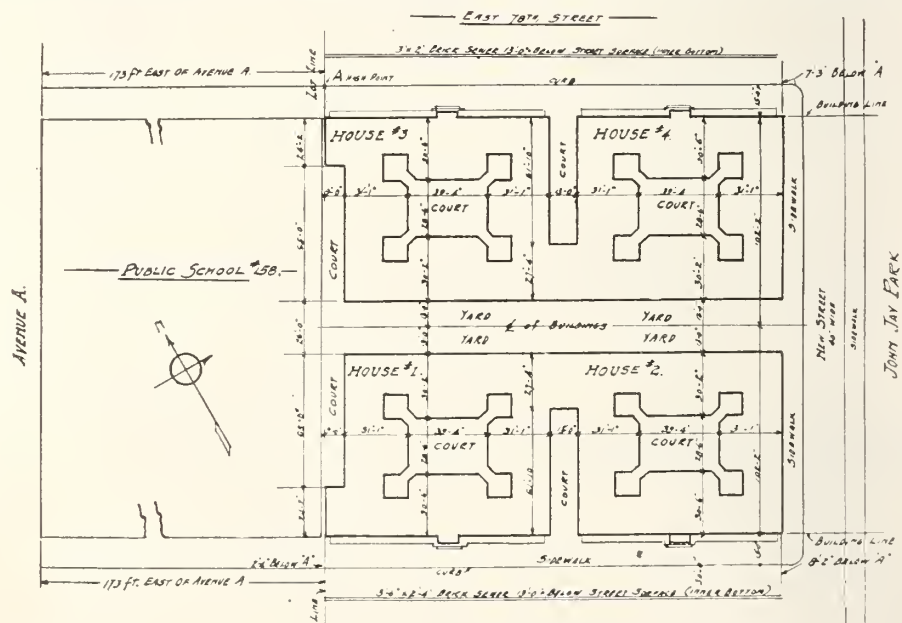
No doubt the most important part of the mechanical equipments for these

individual connection system basis, controlled from the engine room.

## Why a Hot Water Heating System Was Chosen.

Of the two systems of heating (steam and hot water), the central system of forced hot water circulation offered the following advantages:

(a) Economy in operation, averaging approximately between 15 per cent. and 20 per cent. less than a central steam



Block plan of the buildings.

advantage over the hot water system, such as the above, in initial cost, and, although this worked out to be approximately 18 per cent. more than the steam heating plant, it was found that the decided advantage in operation obtainable more than warranted the installation of a hot water system for this type of building.

This increase in cost is largely due to the fact that approximately 25 per cent. more radiation is required, and would have been nearer 50 per cent. if the plant had been designed on a hot water gravity basis with individual plants in each building.

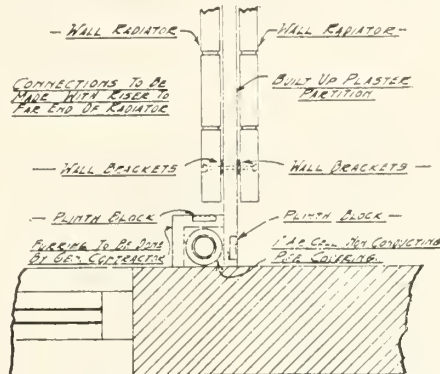
It might be interesting to know that, due to the extreme close clearances to which all of these rooms had to be designed, in order to meet the tenement house laws of the city, even the increased space of the radiators was considered important enough at one time almost to give up the idea of hot water heating, if it had not been for the very important factor of sanitation. These figures showed that by increasing the radiation 50 per cent. for a given room the increased radiation space went as high as 34 per cent. in some instances per radiator, depending on the design and style compared.

The writer has purposely gone into detail with regard to the above, in order that it might be shown conclusively at the start why this type of system

was adopted in preference to steam heating for the conditions imposed.

## General Operation of Forced Hot Water Heating System.

From the exhaust ports of the 25, 50 and 75 K.W. engine generator units the exhaust steam is conveyed to the muffler tank, located in back of the boiler



Plan of typical riser, showing location of plinths.

room, and from thence to a 200-H.P. Cochrane (open type with by-pass valve) feed water heater; from the feed water heater the steam is conveyed to the primary heater of the forced hot water circulating heating system. By reference to the general mechanical plant layout the reader can very readily follow the cycle of operation and secure the basic principles of the design.

This primary heater has been so designed as to conditions of available ex-

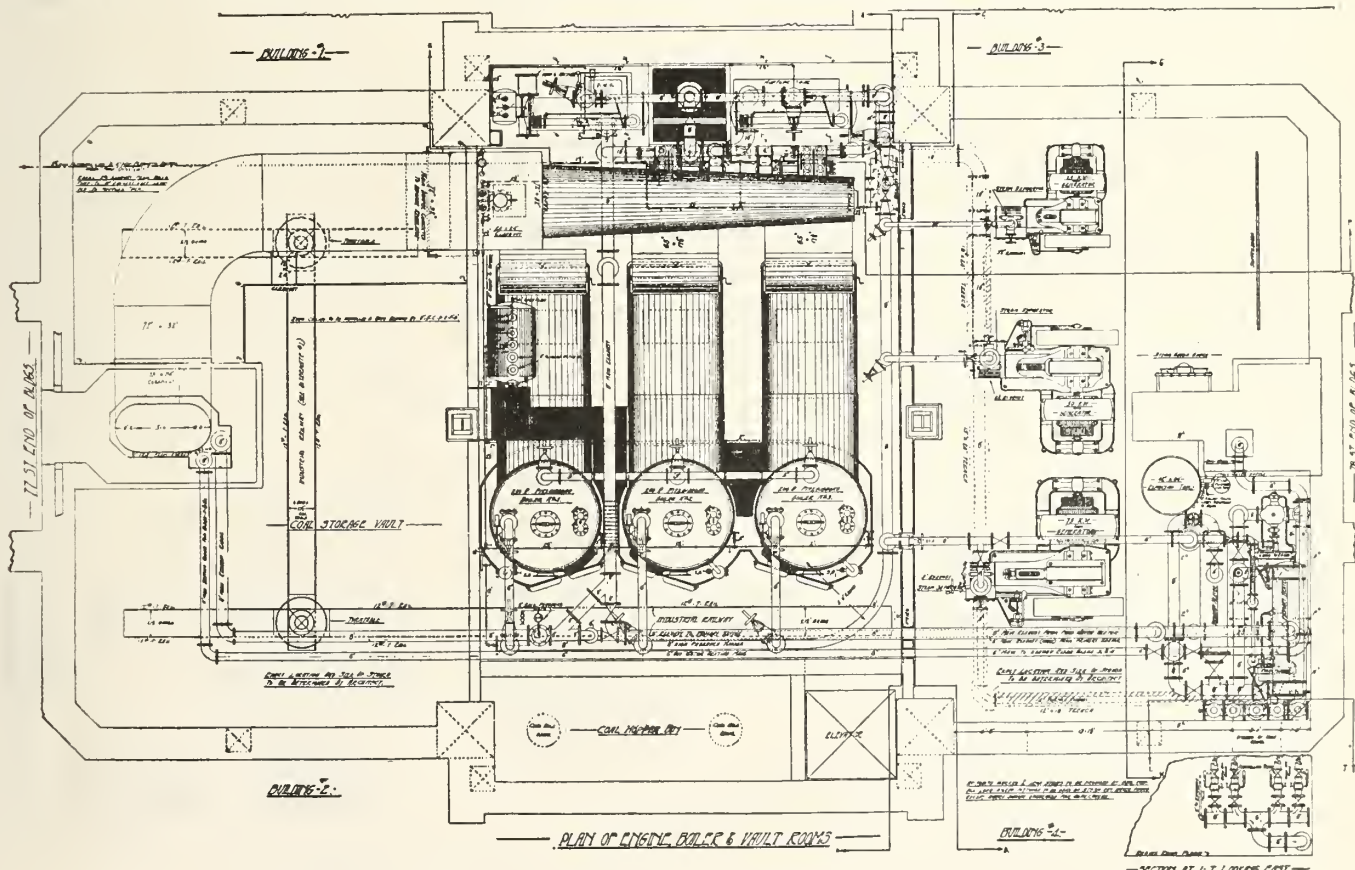
haust steam obtainable from the lighting plant and is so constructed that live steam can be supplemented during the period under light electrical load conditions, should same become necessary, the heaters being so arranged that they can be operated independent of each other, or both operated in series.

These heaters, or, better still, steam condensers, are Wainwright type, with corrugated copper tubes, seamless drawn, made of pure copper, worked "dead soft," to permit of the maximum amount of expansion within the working limits of the tubes; the shells being made of cast steel will stand a pressure of 100 to 200 lbs., respectively.

These heaters are so designed that the steam circulates on the outer shell of the tube and the water through the tube.

It might not be amiss to mention that the control of the exhaust steam from the lighting plant has been exceedingly gratifying, since during eight months of the year not a puff of steam has been found going to atmosphere. One can readily apprehend from this the advantages of good operation coupled with proper design, and the writer hopes at a future date to give a detailed description, with graphic charts, covering the operation of this plant. These charts are now being compiled.

The circulation pumps are with direct-connected steam turbines, units being furnished in duplicate, and their



Plan of engine room, boiler and vault rooms.



## PLUMBER AND STEAMFITTER

reciprocal piping being so arranged that either one can be operated at will. These pumps are capable of handling 1,500 gals. of hot water per minute at a differential hydrostatic head of 35 lbs., all the exhaust from these turbines being used. Each of these pumps is provided with double suction.

The water entering the disc chamber in this way forms a balanced suction,

the control valve on the return side of the angle pattern design.

It might be interesting to know that each individual riser was tested independent of the other at a hydrostatic pressure test of 75 lbs., covering a duration of 24 hours, this being very essential, due to the fact that all risers are furred in, in order to obtain the highest sanitary condition permissible in

other than for eliminating the vapors and fatty gases from the kitchen ranges; in fact, none of the apartments is furnished with illuminating gas other than for cooking purposes, electric light being furnished as a part of the rent.

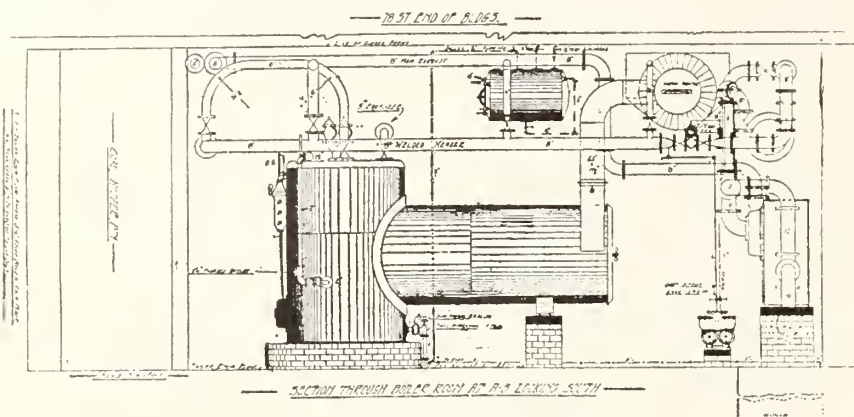
For taking care of these gases, vapors and products of combustion, there was installed over each kitchen range a collecting hood with a register outlet through the wall, from which terra cotta flues are run to the roof. Directly below the parapet wall, a by-pass connection is made to a collecting duct system, which terminates at the suction of the centrifugal steel plate blowers. These blowers are of the multiblade type, American Sirocco manufacture, capable of handling 5,000 cu. ft. of air per minute. The fans are direct connected to 3 H.P. shunt wound 230 volt D.C. motors of the Sprague Electric make.

Each fan serves one-half of one of the buildings, or two fans per building, there being eight fans in all. The controlling dampers from these flues are regulated from the roof proper and are only closed to atmosphere during the regular cooking periods, other times operating on a gravity basis.

The main collecting ducts are run in the attic space, which space is similarly occupied for heating and plumbing piping purposes.

### Domestic Hot Water Service Heating.

There are 64 bath tubs, 64 basins, 64 combination sink basins, or 192 fixtures per floor, for the four buildings, or 1,150 fixtures for six floors, and with the 32 wash tubs in basement, a total of 1,184 hot water fixtures in the entire building. From this it will be apparent that with this kind of tenancy, hot water is greatly in demand. For this service there were installed complete, two 10,000-gal. per hour hot water service heaters, capable of being operated



Section through boiler room at A-B.

which does away entirely with the end thrust on the shaft, the source of much difficulty with single suction inlet pumps. These pumps are furthermore designed so as to permit of free access to the interior, being cast in halves. This construction permits of the removal of the disc without disturbing either the suction or discharge pipe joints.

From the primary and secondary heaters an 8 in. main is run, branching 6 in. to Buildings 1 and 2, and 6 in. to Buildings 3 and 4. The main controls of these four buildings merge into one common header as shown in section I J of plant layout, from which the engineer is able to determine, in joint comparison with the outside temperature and wind location and velocity, at what temperature the water is to be distributed to each of the four buildings.

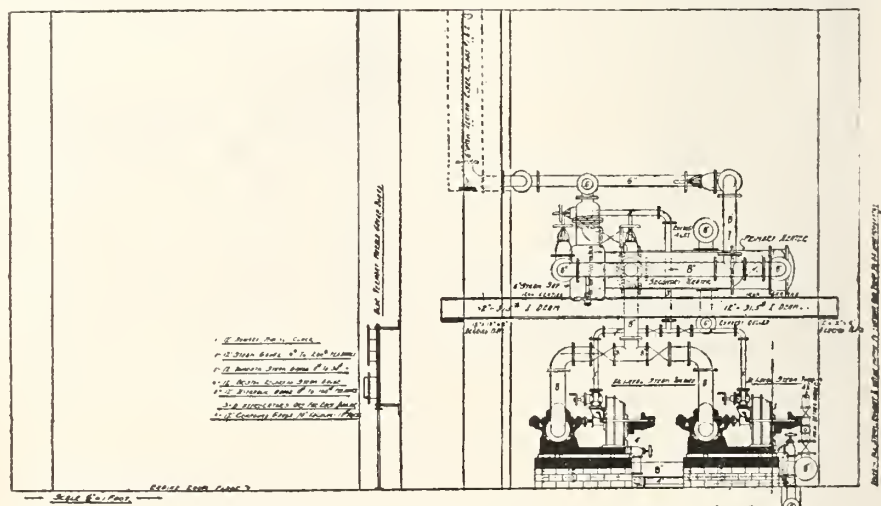
For taking care of the expansion of the water there is provided a 42 in. by 84 in. expansion tank, which is connected to the main return header, air compression being obtainable by means of an 8 in. by 8 in. Westinghouse air brake type compressor. This tank also is a medium for filling the entire system with water.

Each of the two main 6 in. risers leading to the attic space in Buildings 1, 2, 3 and 4 connect to the circuit mains from which the individual one-pipe down-feed risers are taken with lock shield controlling valves below hanging ceiling space, thus permitting ready access to the valves without interference from external sources. Two-pipe connections are taken from these individual risers to the radiators, with

the individual apartments. Special plinth blocks are provided for the connections from the risers to the radiators to take care of the expansion of the branch lines from radiator.

All told, there is installed in all four buildings slightly over 40,000 sq. ft. of cast iron radiators distributed among 1,600 units, and for the most part of the single column, 32 in. high, Peerless plain design, with ample access for cleaning in the rear of same. By referring to detail shown, the reader will notice how it was possible to minimize the number of risers, by serving two radiators in most of the typical instances, by placing them back to back, and supporting them from a common bracket of a special design.

No ventilation was found necessary

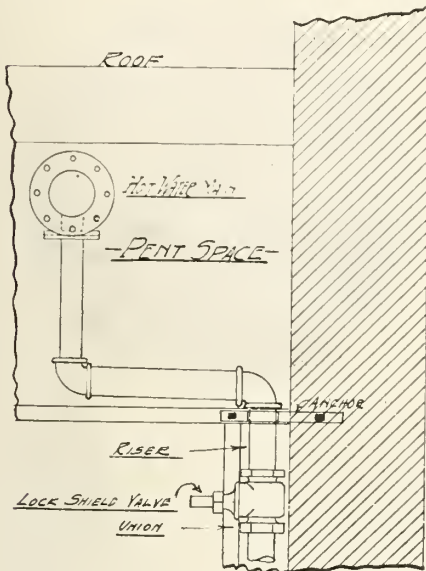


Section through engine room at G-H.

in relay to one another, or simultaneously. These heaters are automatically controlled by thermostatic regulation, the outgoing temperature of water being maintained at 180 degrees F.

#### Power Plant.

For the generation of steam there were installed three 200 H.P. high pressure boilers, and for compactness and accessibility for the space allotment



Typical hot water supply riser connection.

given, met this very exacting condition extremely well. These three boilers are cross-connected and equalized with respect to one another, so that either two can be operated at will.

Each of these boilers contains 2,000 sq. ft. of heating surface and is provided with a Lagonda automatic non-return valve, two safety relief valves, one set a few pounds above the other, high and low water column and other necessary appurtenances.

It might be of interest to note that the boilers have been set at an angle of 35 degrees off centre, exacted by the extremely limited firing space to which these boilers were subjected. An 8 in. welded header in front of boilers, made of one piece of pipe, with long radius leads, connects the boilers to the engine throttle. Vertical steam separators were employed on each of the leads to throttles, as well as one horizontal separator for the use of the live steam heater and the turbines.

For taking care of the high pressure drips from the header, engine throttles, separators, etc., there was installed the Holly high pressure gravity return system. Each of the several sections, such as header engine and turbine throttles is subdivided and carried back to the receiver located in sump pit, from which the condensation is discharged to the discharge chamber, located in

stack, from whence it is carried back, by gravity, to boilers.

For taking care of the condensation from the hot water service heaters as well as the discharge from the traps of the driers used in connection with the clothes drier system, a pump and receiver has been furnished, permitting of the equalization of the pressures from these several sources, which is likewise arranged to be fed into the boilers. This arrangement also incidentally takes care of any surging effects due to excessive demand of hot water, so that no condensation is permitted to be wasted to the sewer. From the returns of the two large hot water service heaters, through proper seal, there are provided two independent condensation meters, permitting of the proper distribution charges to be made for the several services to the buildings, which will be treated later in connection with the article on operating costs of this plant.

#### Clothes Dryers.

For all four buildings, and located in basement, there are provided twelve clothes-drying rack outfits, each clothes drier containing eight racks. These driers are provided with 200 sq. ft. of pipe coil surface. The building is managed in such a way that the drying of the clothes of this vast multitude is arranged in accordance with floors and days; in other words, there being six floors or an assignment of one day per floor. The roofs are used as recreation centres, with roof gardens, etc.

For furnishing electricity for the illumination of the apartments there is installed a three-wire electrical trans-

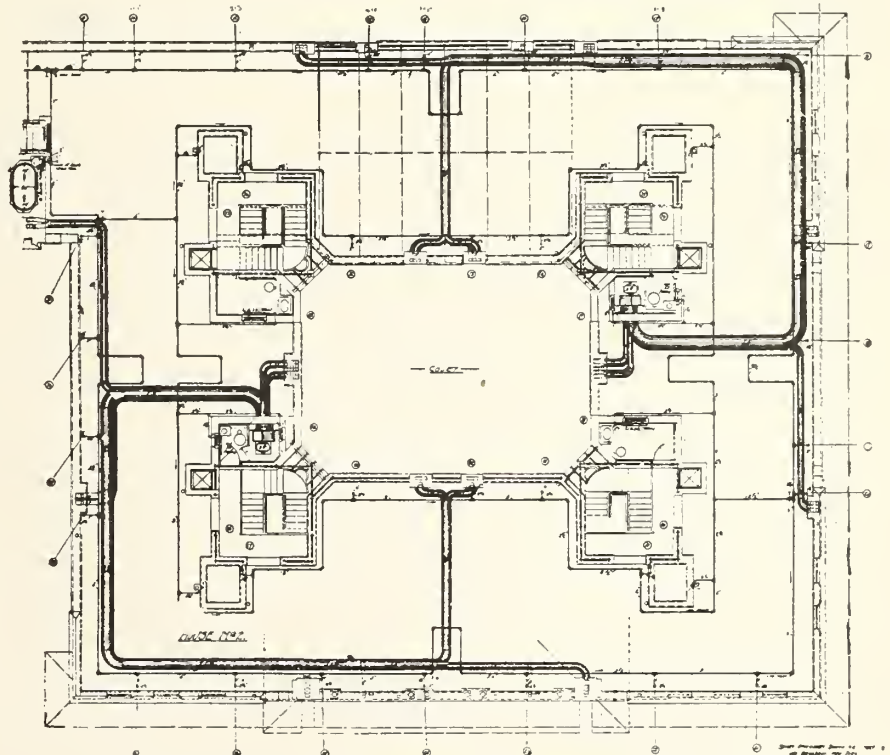
mission system, 230-115 volt D.C., with two wire distribution from floor panels, to the various rooms, and such other motor services required for fans, elevators, etc. Each room is provided with an independent fixture and the cost of the electrical service is practically nil, in view of the fact that all the exhaust available from this source is used for domestic heating, and in connection with the condensers for the forced system of hot water circulation, the steam being diverted to these several systems according to the seasons of the year. From this it is evident that the cost of electricity is only the maintenance and repair, which relatively is very little.

#### Refuse.

The problem of garbage disposal is handled in rather a unique way. Recessed into the wall of each kitchen there is provided a cast-iron box which is provided with a garbage can. The cans are so made that when the door is shut a cover, by means of a series of levers from the door proper clamps down on top of the can, thereby keeping at all times the refuse matter virtually hermetically sealed. The refuse thus collected is periodically removed, every morning and evening, by means of dumb-waiters running to each apartment. This will give an idea to what degree the problem of sanitation was considered.

#### Coal Storage.

For coal storage there is provided a vault large enough to supply, under normal conditions of operation, one month's demand. For handling this  
(Continued on page 20.)



One-quarter roof plan, showing typical ventilation system.



# Tips for Helpers---By "Phoenix"

(Chapter 10)

Can a man be a good steamfitter and a good plumber working at either or both trades?

Only the other day I went into a shop and one of the fellows there made haste to spring a question on me that I have heard many times before. It's the same as appears at the head of this article, in short can a man be a plumber and a steamfitter at the same time and be equally good at both. Put him in any place and can he make good at whatever job he may be put to at either trade?

Now that question has been disputed on both sides all over any section of God's green earth wherever a plumber or a steamfitter has chanced to come together. The two trades have many things in common; then again they have such radical differences that there seems to be no similarity between them.

Take Fig. 1 shown here, for instance. It shows how to take a measurement.

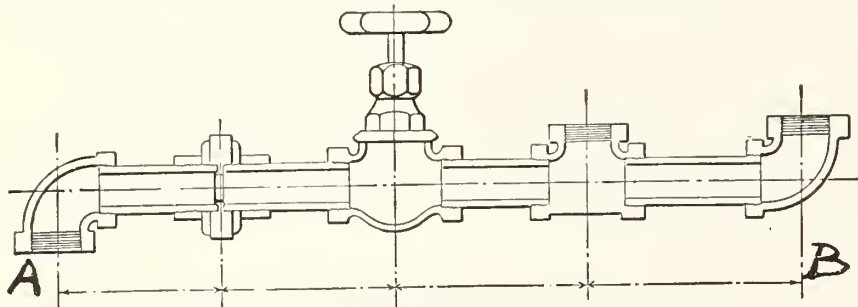


Fig. 1.

Now it would not make one "hooter's" worth of difference as far as measuring was concerned as to whether or not the distance between the points "A" and "B" were made up of steam fittings or of plumbing fittings. The act of measuring would be the same and the man who measured would have to know how to measure properly.

On the contrary, Fig. 2 shows a distinctly plumbing bit of work. Nothing about it calls to mind the steamfitter, nor any of his usages or tools.

In Fig. 3 we see a radiator and some connections. This figure does not call to one's mind anything that savors of the plumber. Now the question right here is, can the man who put up Fig. 3, turn around the next hour and put up a job like the one shown in Fig. 2? Some say "yes," while others declaim vehemently "that it is impossible."

Coming down to the real facts of the case, both parties are right and then again both are wrong. It's just like

this: one man can do both jobs and do them up brown too, but it dead sure depends upon the man.

There is no place in either trade where so much depends distinctively upon the man as right here.

To say that a bright, sober, capable man, with good common sense, can not master both trades so that he can do any work that would come up in towns and cities up to 100,000 in population is to make a statement which the facts of the case do not bear out.

I have known many journeymen who could do both plumbing and heating, not only the work part of it, but estimate as well and they were men whom you could put on any ordinary job and they would make good. So good that, in many cases, they were far better than either the specialist plumber or fitter.

I do not want it to be understood that I am recommending that all apprentices go to work and attempt to learn both trades for that surely would be a mis-

could not hold his job. There would not be enough work for him to do in such places. So this question, like hundreds

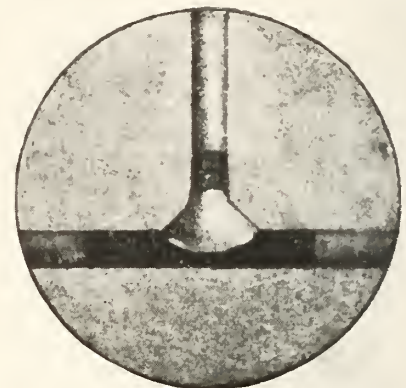


Fig. 2.

of others in both crafts simply resolves itself into one of common sense and convenience.

There is certainly a distinct call in the business for men who can do both plumbing and heating. To say that there is not is simply to go against the advertisements that appear in almost any paper. To say that no man can do both branches of the work and do first class work is not making it so, because there are hundreds who CAN.

It requires, however, a man who has good judgment, good powers of remembering matters and one who pays strict attention to his daily business. No "slob" can succeed in being both a fitter and a plumber.

To a young man just starting, and who does not know exactly where he is at,

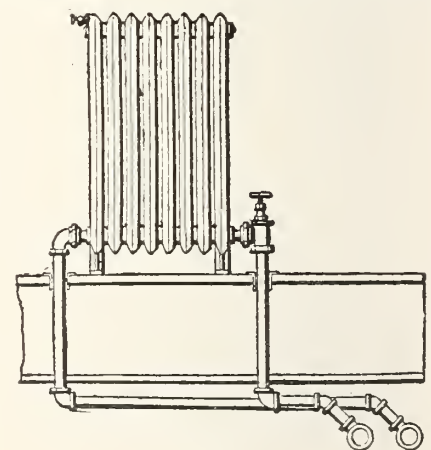


Fig. 3.

I would say, "put on your thinking cap and try to make a decision before you fool away too much time."

(Continued on page 20.)

# Complete Course in Sheet Metal Work

By L. W. KOSER

We, therefore, carry the vertical line, O-P, on down through fig. 1, and at any convenient point on this line as R, and with a radius equal to the radius of the circle as O-1, and with R, as centre, we draw the outside circle of fig. 2. Then with the radius B-2, of fig. 1, and R, of fig. 2 as centre, we draw the next circle, which represents the base of the section or zone B, as the outside circle represents the base of the zone A. Then with the radius C-3, of fig. 1, and with R as centre, we draw the inside circle.

We now divide the outside circle of fig. 2 off into equal parts (for convenience sake, we only need to divide one-quarter of it, and when we want to lay

out the stretchout we can lay out four times this space).

Now draw lines from each of the numbers into the centre R. By this means we divide the inside circles into the same number of equal parts.

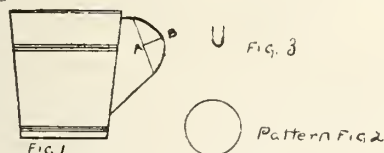
Let us now develop the pattern for the zone A. Place the point of the compass at S, and the lead at 1, fig. 1, and with any convenient point as centre as K, fig. 3, describe the arc N-M, lay out the stretchout of the base of A, or the outside circle of fig. 2. Then draw lines from the points 7-7 into the centre K. from 2 to 3 of fig. 1, and draw the arc Measure up on these lines the distance

from 1 to 2, fig. 1, as shown by U and V. Then with K as centre, and K-U as radius describe the arc U-V. This completes the pattern for the zone A. Allow for flanges.

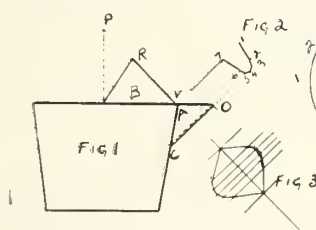
To get the pattern for the zone B, set the point of the compass at H, and the lead at 2, fig. 1, and with any convenient point as centre, as J, fig. 4, describe the arc E-F, on which layout the stretchout of the base of the zone B or the second circle of fig. 2, and draw lines into J, measure up the line E-J, the distance W-X.

If there were more zones you would proceed in the same manner to get each

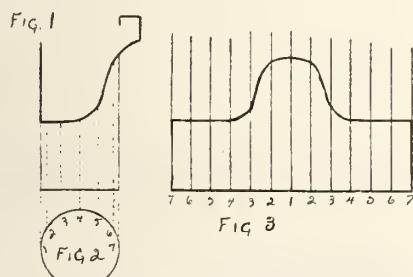
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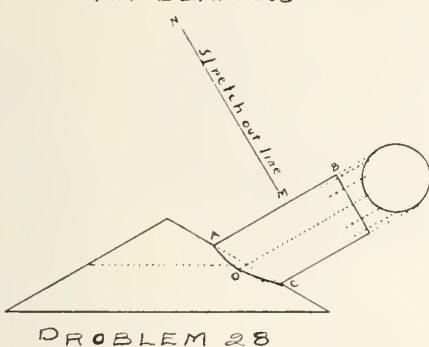
PROBLEM N° 23



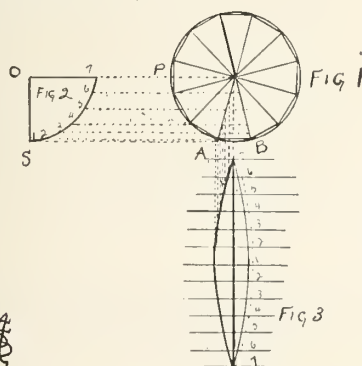
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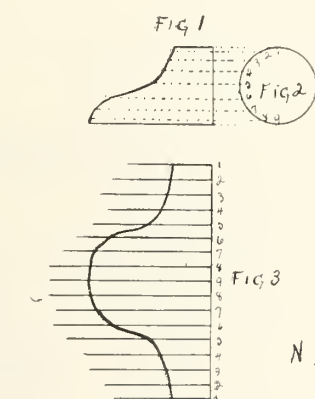
PROBLEM 25



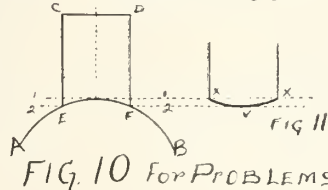
PROBLEM 28



PROBLEM 29



PROBLEM 26



PROBLEM 27

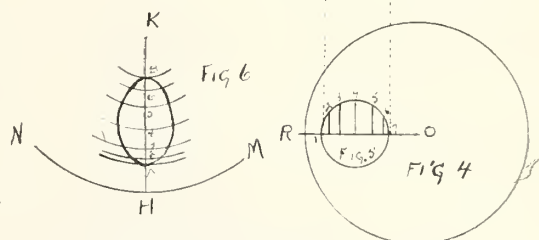
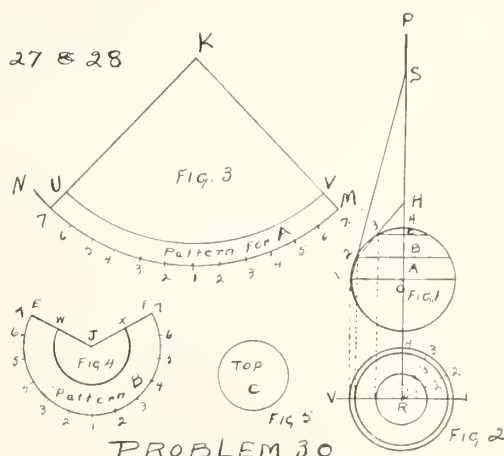


FIG. 10 for PROBLEMS 27 & 28



PROBLEM 30



one of them. To get the top part, put a circle a little larger than required, and raise it on the hammering block, or in other words, hollow it out to the shape of the ball.

The same remarks in regard to flanges as set forth for prob. 29 apply to the zone method.



### PLUMBING MARKET.

Toronto, Nov. 30.—The demand for plumbing and heating supplies of all kinds has been very great, especially for this season of the year. Owing to the tremendous amount of building which has been done this season plumbers have been exceptionally busy. "At present our plumbing staff consists of 161 men; last year the highest mark we ever reached was 112 and then we thought we were going some." Such was the way one firm expressed the season's business.

Much contract work is still being done and will likely continue for some time yet. This fact has done much to keep up orders going in to the various supply houses.

Boilers and Radiators.—For both these lines there is very great demand, and supplies of both are very limited. While some styles of radiators can be obtained without very great difficulty, it is next thing to impossible to get others immediately upon ordering them. Boilers, too, are hard to get. Manufacturers are turning them out as rapidly as possible but even at that are unable to keep up with the great demand, and of necessity, fall a few days or a week behind.

Lead Pipe.—A considerable change has recently been made in the price of lead pipe. Latest quotations are as follows:

Lead waste 9c a lb. and 10% off.  
Water pipe 7½c lb. and 10% off.  
Traps and bends 30% off.  
Caulking lead 6½c on less than 200 lbs., 200 lbs. and over, 6¼c.  
Sheet lead, 2½ lbs., full roll 7c; 3lbs. and over 6¾c.  
Cutacross sheet ¼c extra.  
Cut size ¾c extra.  
Pig lead, ton lots, 5¼c; less than ton lots, 5½c.

Demand for lead pipe is at present comparatively small. A chance is thus given manufacturers to get well ahead with supplies.

Soil Pipe.—Demand for soil pipe has been falling off of late, but manufacturers are still busy preparing for the year that is ahead of them. No change in price is to be reported. Latest quotations still give a discount of 65%

Iron pipe and fittings.—For some time the tendency has been to advance prices on all iron pipe and fittings ow-

ing directly to the increased cost of raw material. It is only a short time since iron pipe was advanced slightly, and it is stated by some manufacturers that another advance may be expected. Present quotations give: cast, 65% off; malleable, 40% off; and iron pipe all net.

Solder.—Demand for solder has been fairly good during the past few weeks although no very great rush has been experienced. No change in price has recently taken place, easy wiping still being quoted at 26½c.

Enamelware.—Call for enamelware has fallen off lately to a very great extent. Orders are still coming in but these are mostly for small quantities. No change in price is to be reported.

Metals.—Metal trade here has been very brisk for some time now and signs for business falling off are sought in vain. Orders for many lines are booked far in advance. Some manufacturers are sold up to the last quarter of 1913. Especially is this true of iron and steel and plates and sheets. Immediate delivery on orders booked now is altogether out of the question, and those who can promise delivery in six months consider themselves lucky. Trade is exceedingly brisk, and manufacturers claim that all records of the past are being broken.



### TIPS FOR HELPERS.

(Continued from page 18)

Decide whether or not you are going to work in a smallish city or are going to hit for the largest centres. If you come to the conclusion that the biggest cities are your game, go in for one trade. The one you can do the very best. Learn it well. Learn all about it that you possibly can and then some, for you will need it all, whether you run the business (eventually) or always work with the tools.

If, however, you prefer to live in a small town, and you believe that you will always continue in this kind of business, learn both trades if the stuff is in you to assimilate both of them.

That line of conduct looks like good horse sense to me, and no need of having any feelings on the matter either.



### A FORCED HOT WATER HEATING SYSTEM.

(Concluded from page 17)

coal from the bunker to the vault there is installed a Hunt industrial railway system, with the requisite turn tables, etc., track being laid on 21½-in. gauge, consisting of 12 lb. T rails. One-ton end tilt apron industrial car from which it is possible to feed the boilers direct

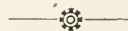
without re-loading, is provided. In connection with this there is provided a one-ton industrial track scale, with sliding main poise levers, so that it is possible to weigh every ton of coal actually used. There is also provided in the main court, between the two curbs of buildings, a 10-ton Fairbanks platform scale, so that all coal received from the coal yard is weighed before delivered into the bunkers.

The buildings were designed and erected from the plans of H. Atterbury Smith and William P. Miller, associated architects. The power plant, heating and ventilation equipments were designed by Griggs & Hollybrook, and the electric lighting by Clark McMullen & Riley. The contractors for the mechanical equipments were Evans, Almirall & Co.



### NEW MANAGER APPOINTED.

The management of the B.O.T. Manufacturing Co. has recently come into the hands of T. Hawgood. Mr. Hawgood's career with the company has been short, but interesting. Some two years ago he started in with them as bookkeeper. Remaining at that only a short time, he was advanced to the position of traveling salesman and covered Toronto and Eastern Ontario. While employed in this capacity, Mr. Hawgood went right to the root of the matter and gained a thorough knowledge of the manufacture of water closet combinations from clay to the finished product—also of their mechanism and installation. From traveling salesman Mr. Hawgood rose to assistant manager and now for about two weeks he has been acting as manager.



### NEW WAREHOUSE OPENED.

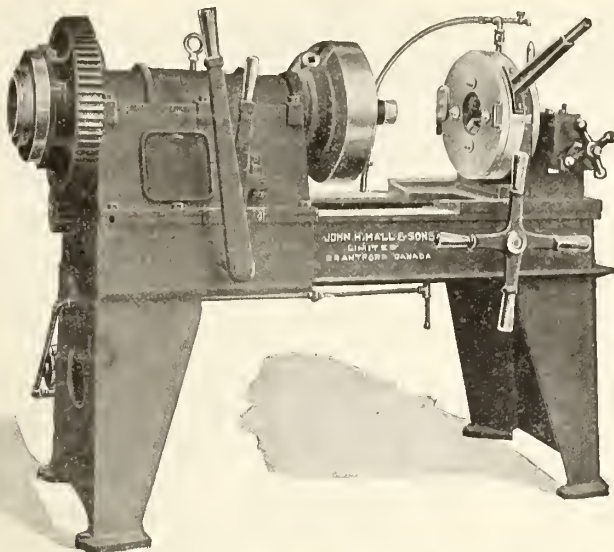
The H. W. Johns-Manville Co., of New York, have recently opened a new Southern warehouse at No. 31½ South Broad St., Atlanta, Ga.

The entire building embracing three floor and a basement with a total floor area of 10,000 sq. ft. will be utilized exclusively as a warehouse for Johns-Manville products such as roofing, boiler and pipe coverings, cements, packings, fire extinguishers, electrical railway and automobile supplies.

The company's Atlanta office will also be located in the same building with the local warehouse.



All sanitary and heating engineers will be interested to learn that Alderman Yeomans is going to run for Controller at the first of the year.



## PIPE THREADING MACHINES

MADE IN CANADA. ALL SIZES.

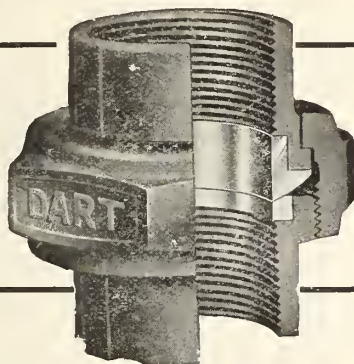
Belt or motor drive for the plumber, the jobber, or the mill, also Double and Single Head Rapid Nipple Machines.

### RAPID UPRIGHT ROLLER PIPE CUTTERS

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The Dart Union Pipe Coupling has, in the 20 years it has been in use, proved that it is the Union of the Highest Efficiency.

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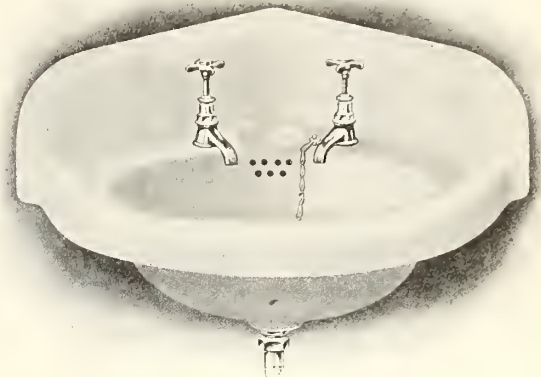
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Where tools are used under conditions that admit of danger to the operator, the integrity of the tool for the purpose of insuring the workman from injury is a matter of first importance. No other pipe tool is similarly proved.

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To obtain extra heat from hot water heating systems, at no extra cost, simply

install a "B" Heat Intensifier which, by raising the boiling point of the water from 212° to 240°, increases the number of heat units in each square foot of radiation, effecting a direct saving in pipes and fittings, and insuring an absolutely perfect circulation.

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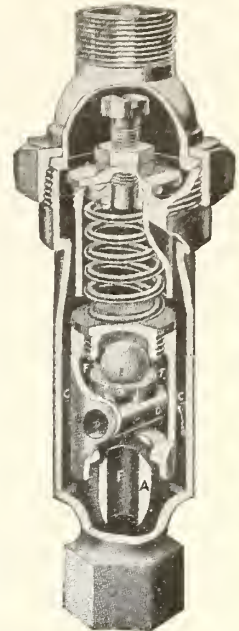
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See Sweet's Index, Pages 1139, 1140, 1141.



Hot Water Quick Opening Radiator Valve.

## "MILLER" Hot Water and Steam Radiator Valves

The bodies and bonnets of our Hot Water Quick Opening Radiator Valves are made in one piece, thus having a great advantage over other valves, as it leaves one less joint or possible leakage. The cone-shaped Disc prevents sticking.

Our superior Steam Radiator Valves have very low seats and a high lift of Disc.

We manufacture both valves from 1/2 in. to 2 in., with or without union, also union elbows.

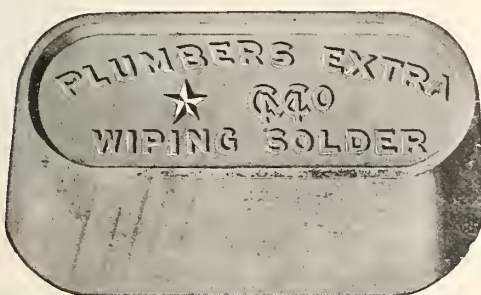
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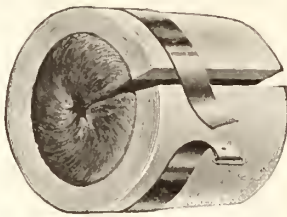
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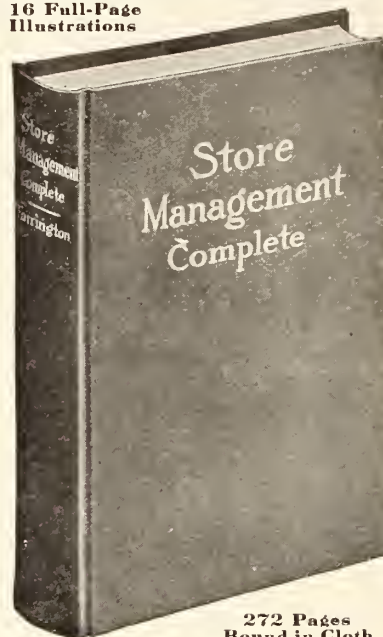
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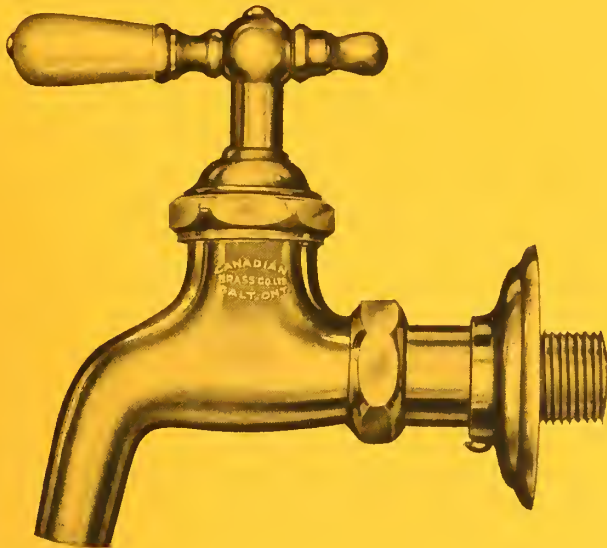
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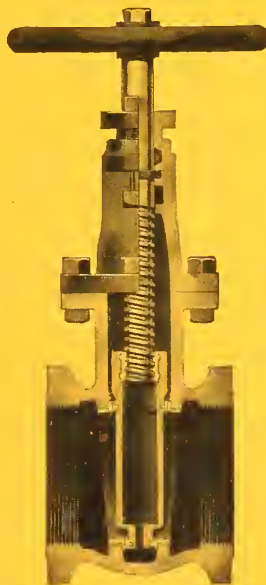
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Vol. VI.

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No. 24

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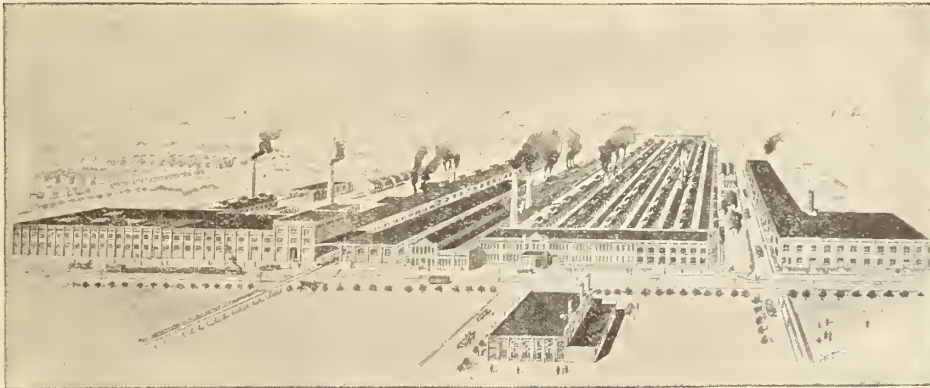
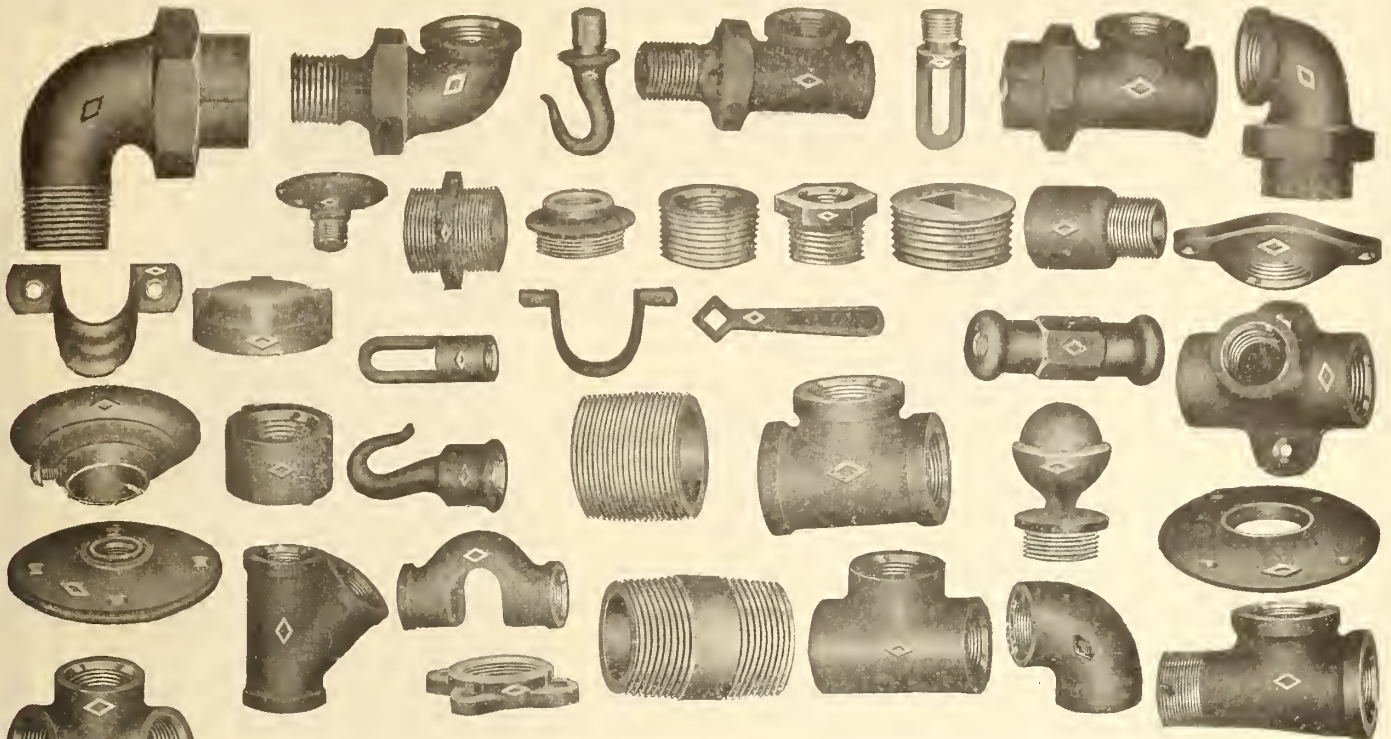
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# **“Standard Sanitary”**

## **“Bristol” Pattern Bath**

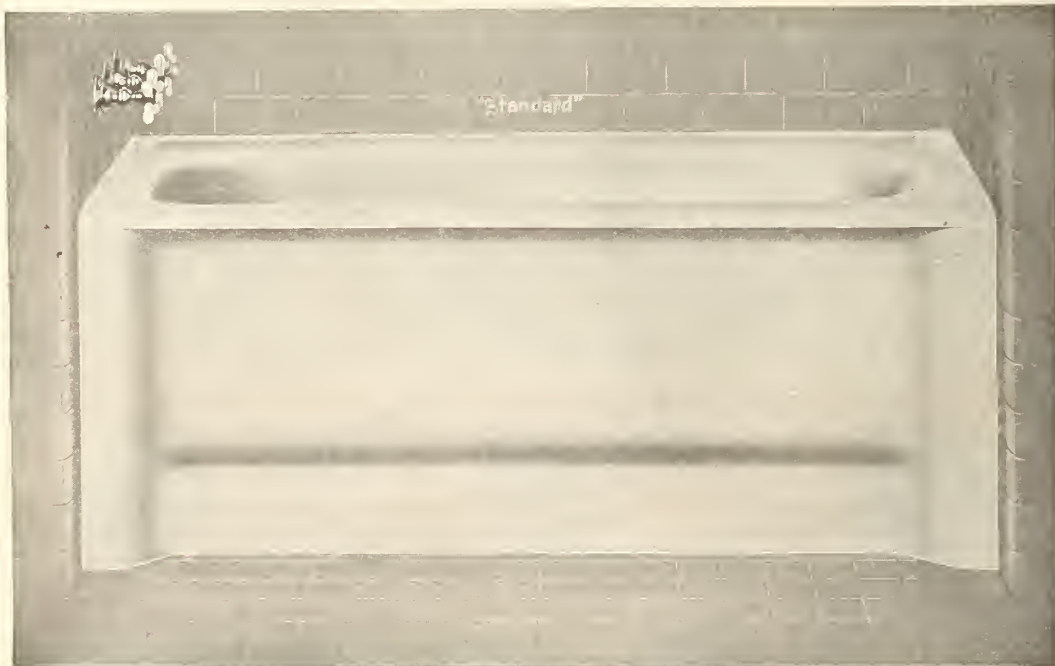
In many bathrooms, especially in hotels and apartments, where all of the space must be utilized to prevent crowding, a recess bath is sometimes the only fixture that can be used to advantage.

The “Standard Sanitary” Bristol Bath was designed particularly for that purpose, and incidently there are many distinct advantages gained by its installation.

On account of tiling into the wall and floor, the accumulation of dirt and moisture back or under the bath is prevented—thus reducing cleaning labor to a minimum.

This feature is also particularly noteworthy where a shower is used in connection with the bath, as any water that may splash against the walls is drained back into the bath.

The “Standard Sanitary” Green and Gold Label which appears on the bath is an assurance of lasting quality and satisfactory service.



**“Bristol”—Plate P-2355 J.**

“Standard Sanitary” Porcelain Enameled Bristol Pattern Recess Bath with slope end, with left hand end outlet and 3-inch roll rim; fitted with P-10022 “Imperial” Bottom Bell Supply and Waste Fitting, 3/4-inch Supply Pipes, Compression Valves, China Cross Handles with Indexes and Indexed China Cross Handle Waste.

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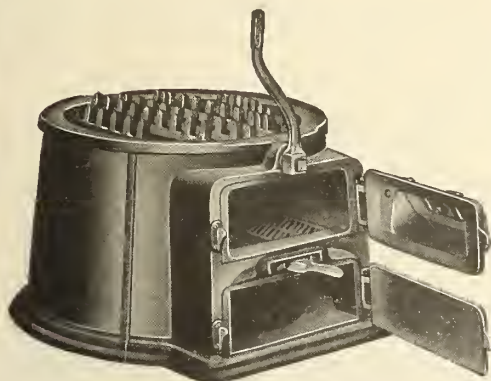
The "Daisy" is built in the best equipped plant on the continent, and the very best material is used in every part of it.

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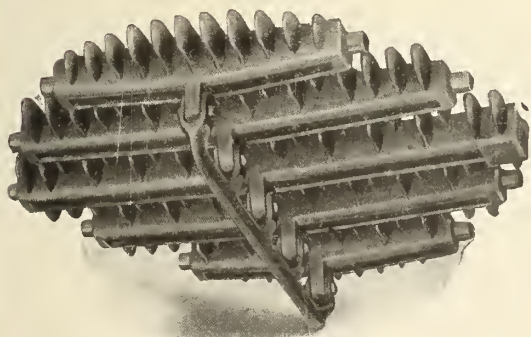
The Grate is of the interlocking-knife pattern, the bars being so connected that they lock together when the shaking handle is agitated.

The Daisy Firepot is made of such depth that all the gases are consumed in the combustion chamber, resulting in a high temperature of the water on a minimum consumption of fuel. On the inside of the firepot are vertical ribs, of sufficient size to allow the air to rise freely through the coal at the outside edges of the fire, keeping it burning evenly and preventing the accumulation of ashes near the water in the fire-pot section.

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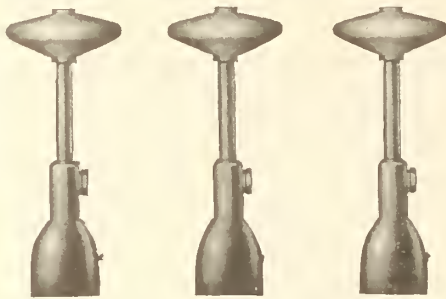
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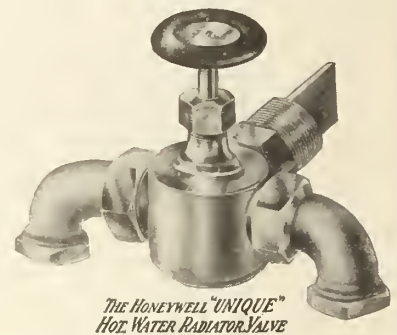
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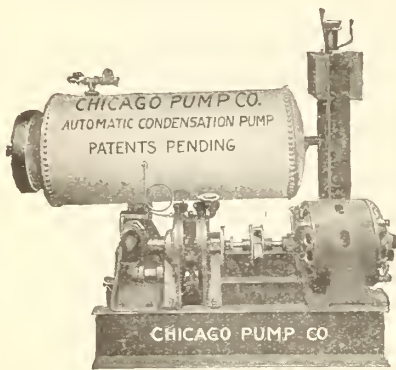
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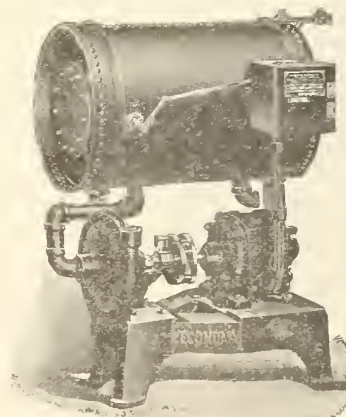
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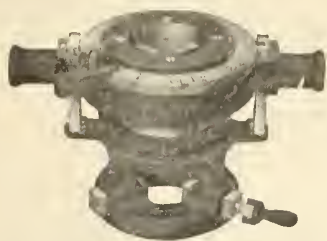
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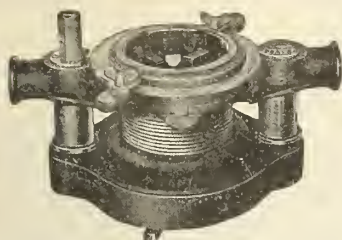




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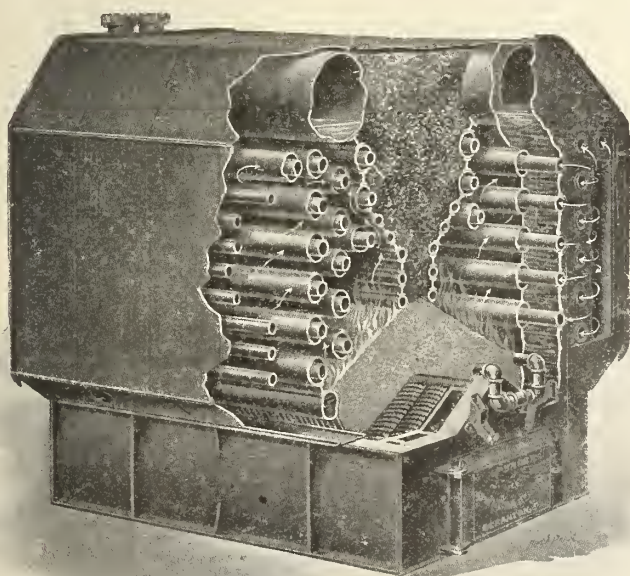
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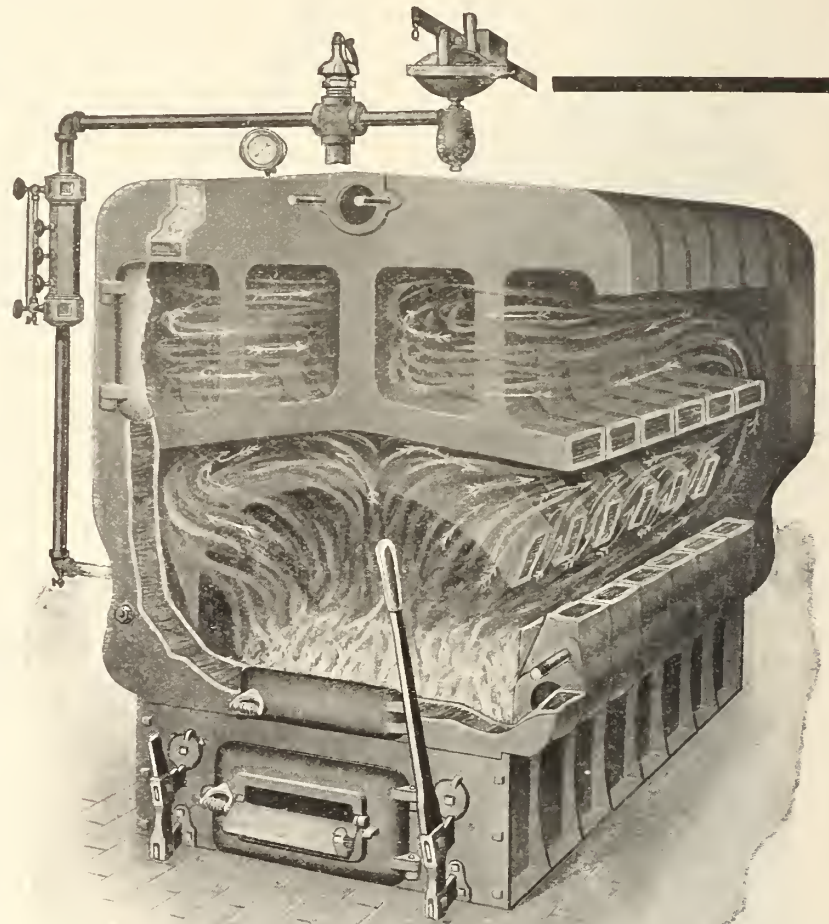
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# Plumbing Installation In New Union Station

Description and Specifications Followed in Installing Plumbing System in Ottawa Union Terminal Station—A Complete System Installed with Many Interesting Points.

RECENTLY completed in the city of Ottawa stands the handsome new Central Union Passenger Station, in connection with which has also been erected the fine twelve-storey hotel known as the Chateau Laurier. Both of these structures were erected by the Ottawa Railway Terminal Co. (a branch of the Grand Trunk Railway System), and will make interesting reading for the plumbing fraternity, says "The Plumbers Trade Journal." In this article the passenger station alone will be described.

The station is of four floors in height and provided with commodious waiting rooms, train sheds and the various offices required for the railway company's use. The entire work was designed and installed under the direct supervision of Howard G. Kelley, vice-president of the railway company. The building was designed by Messrs. Ross and MacFarlane, architects of Montreal and Winnipeg. The mechanical equipment was designed by Messrs. Westinghouse, Church, Kerr & Co., engineers of New York city, and was installed under the personal supervision of T. Jeffreys Ashe, representing the engineers. The plumbing work was installed by James Ballantyne, plumbing and heating contractor of Montreal, in a very high-class manner and in accordance with the following description and specification:

The soil, waste, rain water leaders and vent piping, from 3 in. to 12 in. inclusive, are composed of tarred extra heavy cast iron soil pipe and extra heavy cast iron soil pipe fittings.

Above 12 in. in size the pipe is cast iron bell and spigot water pipe in 12-ft. lengths.

All joints on the cast iron pipe lines

are made with picked oakum and molten lead, no putty or cement being allowed.

The waste and vent piping under 3 in. in size is of standard weight galvanized wrought iron.

The traps and fittings on the waste and drainage lines 2½ in. and under are shouldered, heavy, galvanized, cast iron drainage fittings and traps, tapped to give a uniform grade to the branches of not less than ¼ in. per foot. The fittings on the vent lines of similar sizes are galvanized cast, or malleable, steam fittings. The wrought iron pipe is made up with screw joints set up in red lead.

The use of lead pipe is done away with as much as possible, being used only for short branches on the soil, waste and vent lines. When so used it consists of "D" drawn lead pipe.

All joints in the lead piping are wiped solder joints, as well as joints between lead and brass. Between cast iron and lead pipe the connection is made by the use of a cast brass ferrule wiped to the lead pipe and calked into the hub of the cast iron pipe. Between wrought iron and lead pipe a cast brass soldering nipple is used, which is wiped to the lead and screwed into the wrought iron pipe or its fittings. Where wrought iron pipes join the iron lines the connection is made by calking the threaded end of the wrought iron pipe into the cast iron hub.

Where brass pipe is used (which includes all exposed metal work, pipe, traps, fittings, etc., unless otherwise described), it is of polished brass, nickel-plated, composed of thoroughly annealed, seamless, drawn brass tubing of iron pipe sizes. Connections between brass pipe and between brass and iron pipe are made by means of standard iron pipe

tapered threads, slip-joint couplings not being permitted. The brass ferrules used are of best quality, bell shaped, extra heavy, cast brass, 4 in. long. The soldering nipples are of iron pipe size brass pipe and cast brass.

The brass screw caps for cleanouts are of extra heavy type, ⅛ in. thick and with a flange 3-16 in. thick. The body of the cleanout ferrule is of the same weight as for the brass calking ferrules.

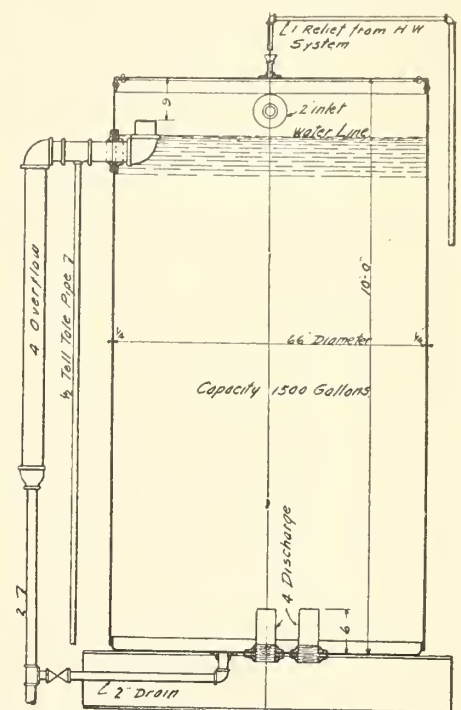


FIG. 2. WATER SUPPLY TANK WITH VARIOUS CONNECTIONS. OTTAWA UNION RAILWAY TERMINAL.

In running the drainage lines a minimum horizontal pitch of ⅛ in. per foot is maintained and where possible ¼ in. per foot is used. On the horizontal runs supports are spaced every 10 ft., consisting in general of wrought iron hangers attached to the steel floor beams; where piping is run close to the floor, pipe standards made up of 8-in. flanges, 1½-in. pipe and wrought iron cradles are used, the flanges and pipe being imbedded in concrete piers about 12 in. high, and where run under floors in the ground it is laid on a well-rammed earth bed. No offsets are made except by the use of eighth bends and all bowed pipes and skewing of joints are eliminated. No short one-quarter bends, double hubs, common offsets, short roof increasers, bands or saddles are used. The connec-

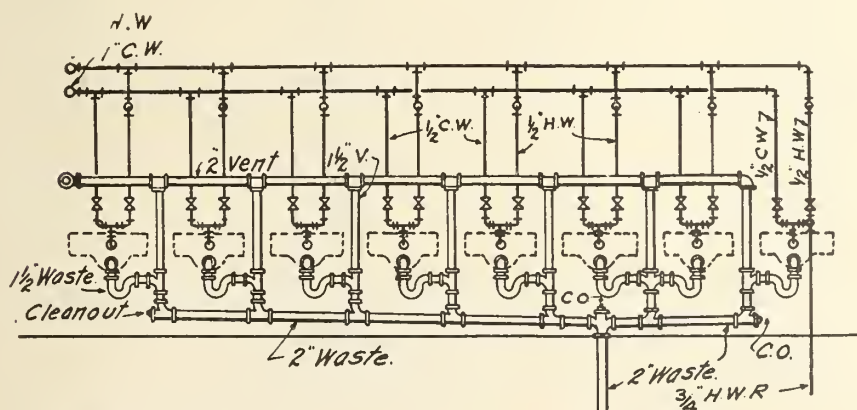


FIG. 1. THE SERVICE PIPING FOR A TYPICAL GROUP OF LAVATORIES IN THE OTTAWA UNION RAILWAY TERMINAL.



tions between the vertical soil stack and horizontal lines are made by means of Y branches and eighth bends, and branch wastes are connected to the soil stacks with long TY's or Y's and eighth bends.

Where the lines are run through brick walls, cast iron sleeves are provided, and when passing through the roof they are flashed with 16-oz. sheet copper, 18 in. square, securely fastened to the roof and calked into the iron pipe hub in such a manner as to leave chance for expansion and contraction of the pipe without breaking the joint; these pipes are carried to a distance of 3 ft. above the roof, and if the stacks are less than 4 in. in diameter are expanded to 4 in. by an increaser 9 in. long, just below the roof line.

At the ends of all horizontal drainage lines and at other desirable points, cast brass, screw cap cleanouts are placed. All the brass unions used on the waste lines are ground face type set up in red lead and are in no case located on the sewer side of any basin or other fixture traps.

All fixtures are arranged to drain through one trap and one trap only besides the house trap. The traps are placed in every case as close to the fixture as conditions permit, and are of the same weight and thickness as their respective branches. The exposed or accessible traps, except water closet traps, are equipped with cleanout screws placed either on the inlet side or below the water line. The leader traps are all running traps with cleanouts the full size of the trap up to 5 in. in diameter. The main kitchen sinks are provided with grease traps.

The size branches for fixture soil and wastes are: For water closets, 4 in.; for sinks, 2 in.; for lavatories, 1½ in.; for urinals, 2 in.; for slop sinks, 3 in.; for floor drains, 2 in.

The vertical soil, waste and roof drainage stacks taking drainage from the fixtures and roof of the station, are carried down to the basement, where they are connected together into the house drain, which is carried out to the building wall, where a fresh-air inlet is connected to a fresh-air inlet box located in the side wall of the building. On the sewer side of the inlet connection is placed the house trap, which is provided with two extra heavy brass ferrule cleanouts with brass screw caps. From this point the house sewer is carried to and into a man-hole located just outside the building wall in Bessemer Street.

The horizontal vent lines are all pitched so as to drain back to the fixtures. Branch vent lines are run above the top of all fixtures and branch vents are connected to the waste lines as close

as possible to the crown of the traps. The vent connection for water closets is taken from the branch soil pipe just below the trap, and no other waste is connected between the vent and the closet outlet. An elevation of a typical cluster of lavatories, showing the waste and vent piping, is given in Fig. 1.

Roof leaders are run inside the station as much as possible, and are carefully trapped before entering the soil and waste lines in the basement. The connections between the cast iron leader pipes and the roof outlet boxes are made with heavy brass ferrules and 16-oz. copper sleeves.

Cast iron floor drains are placed in the refrigerators in the kitchen and lunch room, which are of the combined floor drain and trap style, with 2-in. outlets and top of polished brass about 9 in. by 9 in. in size.

The strainers are hinged, but are held in place by a countersunk screw.

The concealed service water piping, both hot and cold, is composed of galvanized standard weight wrought iron pipe.

The fittings on the wrought iron piping are galvanized cast or malleable steam fittings, those on the main supply to the house tank and the fire lines being extra heavy and the balance standard weight. The service piping exposed is of nickel-plated, seamless drawn, brass tubing of iron pipe size, with cast brass, malleable pattern fittings. The service piping for a typical group of lavatories is shown in Fig. 1. The diameters of the supplies to the various fixtures are given in the following table: Water closet (flush valves), 1¼ in.; urinals, ¾ in.; lavatories, ½ in.; slop sinks, ¾ in. and sinks, ¾ in.

The station service water is supplied from a 4-in. T connection, from which a line is run to the house tank in the fan room on the roof.

The house tank is located on the roof in the fan room, and is of about 1,500 gallons capacity. It is constructed of steel and braced with angle irons, being supported on steel beams. Pressed steel flanges are riveted on for supply, discharge, overflow and drain connections. Before assembling, all portions were given two coats of red lead, and after erection in place, two coats of asphaltum were applied. On top of the tank a steel cover is placed, which is bolted to the tank and has a manhole for access purposes. The water supply is governed by a high pressure ball cock. A tell-tale pipe is run from the overflow pipe of the tank to a convenient location in the basement to give warning in case the ball cock fails to work. A complete detail of this tank is shown in Fig. 2.

The cold water supply for the various fixtures in the station is taken direct from the house tank and distributed in the third floor ceiling to the various cold water drops. There is also a separate direct supply run from the tank to the basement for the hot water heaters.

Each of the cold water drops and each of the hot water risers and drops is valved, the cold water drops having valves located near where the branch leaves the main and being drained by opening the faucet of the lowest fixture supplied. The hot water drops are provided with valves similar to the cold water at the top, and, in addition, have a shut-off valve at the bottom with a T just above with a drip valve for draining. The hot water risers and drops, which are located in the shaft, have

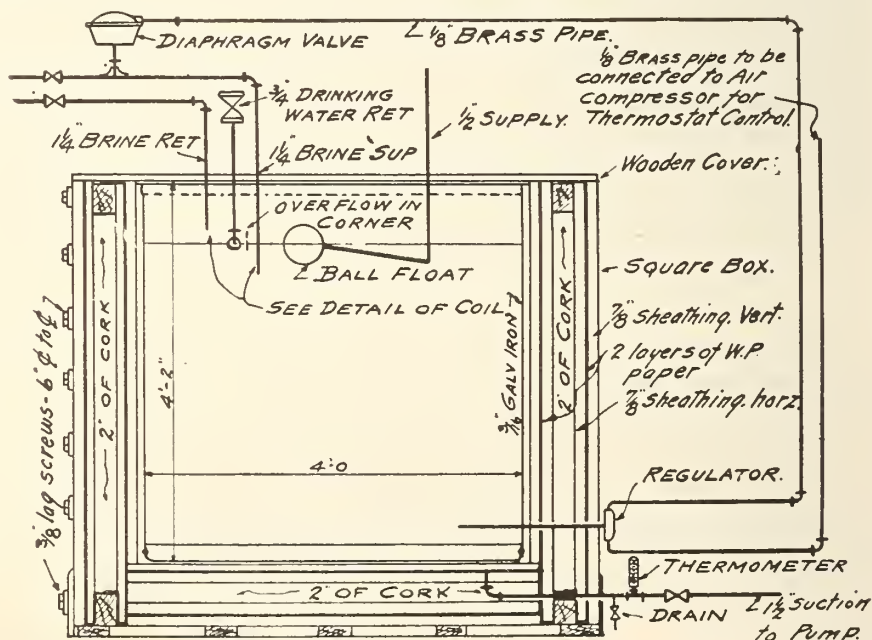


FIG. 3. WATER COOLING PLANT PROVIDED WITH CONNECTIONS FOR SUPPLY, RETURN, THERMOSTAT AND DRAIN, OTTAWA UNION RAILWAY TERMINAL.

shut-off valves with valved drips at the bottom on both the supply and return lines. On both hot and cold water branch to the toilet rooms are located valves close to the risers and each separate fixture supply is valved whenever possible. The check valves used are similar to the Pratt and Cady, those 2 in. and under being all brass and those 2½ in. or over being iron body, brass mounted. Brass tags are placed on all valves showing the numbers and the pipe lines they control, and a framed chart is located in the basement showing the location of every valve, the number and the line it controls.

Numerous sill cocks are installed consisting of polished brass hose cocks, with loose key handles, located in the side-walks, supplied by cold water lines which have stop and drip valves located inside of station walls.

The hot water supply for the station is furnished from two separate hot water heaters, both located in the basement, one being of 750 gallons capacity per hour (supplying the south addition).

The 750-gallon heater has its hot water supply carried direct to the space above the third floor ceiling, where it is distributed to the various drops similarly to the cold water; the 1,000-gallon heater runs its main supply in the basement, from which valved supplies are taken off for the various shafts and carried up to the top of the shaft, where a return circulation line is connected and carried back down the shaft to the basement and back to the heater. Both heaters are supplied by cold water direct from the house tank by the line before mentioned and are of the following description:

Wainwright horizontal corrugated water tube type, with temperature regulators operated by compressed air. Constructed for an operating pressure of 50 pounds of steam, although it is intended to use them on exhaust steam supply most of the time. The copper tube surface is sufficient to heat hourly the required amount of water (750 gallons and 1,000 gallons) from 50 to 175 degrees Fahr. with exhaust steam on.

Cooled water at a temperature of 45 to 50 degrees Fahr. is supplied to the various drinking water fountains in the waiting rooms and lunch room. This system consists of one loop of ¾-in. standard galvanized wrought iron pipe running from the cooling tank in the basement to the various fixtures and returning to the tanks, circulation being maintained by means of a pump. Individual connections between the loop and the fountains are as short as possible, being in no case over 6 in. long. These connections are each supplied with a stop valve.

The cooling water tank, as shown in Fig. 3, is supplied with water through a ½-in. cold water connection governed by a ball cock, and is constructed of 3-16-in. galvanized sheet iron. The tank is 48 in. in diameter, stands 50 in. high and has a removable wooden cover. Flanges are provided for water supply, drain, return and thermostat connections. The suction of the circulating pump is taken out of the bottom of the tank and the return discharges into the top, through a perforated pipe. The circulation of brine in the tank is maintained through two cooling coils of 1¼-in. extra heavy galvanized iron pipe, as shown in Fig. 4, each separate coil being continuous without joints.

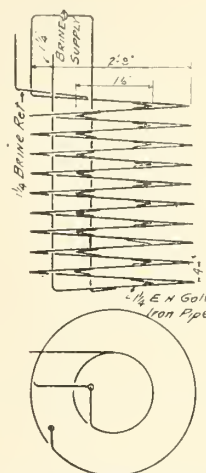


FIG. 4. BRINE CIRCULATING COILS FOR COOLING WATER. OTTAWA UNION RAILWAY TERMINAL.

One coil has a diameter of 33 in. and the other of 16 in., both having 10 complete turns. In the brine supply pipe is inserted a special diaphragm actuated bronze shut-off valve controlled from a thermostat placed in the cooling water tank, the valve itself being operated by compressed air.

The pumps for the circulation of the drinking water are in duplicate, to insure continuity of service. Each pump has a runner and casing of cast iron and is driven by a ½-horsepower electric motor (230 volts direct current), and is capable of delivering 1,000 gallons of water per hour against a 30-ft. head. The motors and pumps are mounted on the same bed plates, and each motor has a separate starting rheostat.

The fire protection is supplied by an existing 6-in. fire main through standard weight galvanized wrought iron pipe with extra heavy galvanized fittings. The fire risers are 4 in. in size throughout, with 2½-in. connections at each floor and on the roof. Shut-off valves, with drips, are placed just below the

roof for all roof connections, and also at the bottom of each riser.

The outlet valves are 2½-in. bronze angle hose valves with rising stem, renewable discs and bronze wheel handles, finished and nickel-plated all over with a heavy cast brass nickel-plated escutcheon.

The racks are heavy, cast brass, nickel-plated, with pressed zinc supporting pins, concave in form and of such a radius that the hose is not pinched at the folds, and of sufficient distance apart to give ample room for folds. The pin supports are nickel-plated brass angles fastened to the rack with nickel-plated bolts. The pins are permanently attached to one side only of the rack, and the rack measures 22 in. from the centre of the supporting nipple to the end of the rack. The attachment of the rack to the hose nipple is accomplished by a sleeve of heavy, cast brass, nickel-plated, the upper end of which is threaded with a 2½-in. standard taper thread and the lower end with a thread to fit hose coupling.

At each outlet is supplied a 100-ft. length of 2½-in. best linen hose, with nickel-plated couplings at each end (of the expansion ring type of seamless drawn brass tubing about 1¼ in. long and weighing five pounds, with the threads the same as those in use by the fire department of the city of Ottawa). The nozzles are of nickel-plated, cast brass, smooth bore type with an even taper. In general, the hose is hung directly on the wall, but in some places it is hung in cases in the wall, at which points are provided glass doors, with nickel-plated brass frames and angle couplings.

There are Siamese connections provided at three points, which are of heavy polished brass, with 4-in. outlets and two 2½-in. inlets, with caps, chains, check valves and escutcheons. The 4-in. openings are of standard threading, but the 2½-in. agree with the fire department standard of the city of Ottawa.

The hot water piping is covered with magnesia sectional covering of 35 per cent. magnesia and the fittings with asbestos-magnesia cement of equal quality and thickness. Canvas jacketing is applied over all covering and banded with lacquered bands. The covering for the heaters is of asbestos-magnesia 1½-in. thick blocks, wired on and finished with ½-in. hard plaster finish.

The cold water piping, where exposed and likely to sweat, is covered with corrugated 4-ply wool felt covering, 1 in. thick, which is lined with tar paper. The fittings are covered with 3-ply similar covering ¾ in. thick. This covering is all jacketed and banded similar to the

(Continued on page 20.)



# Plumber and Steamfitter

## and Sanitary Engineer of Canada

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TORONTO, DECEMBER 16, 1912

### Standardization of Prices

For some time past sanitary and heating engineers all through the country have been wakening up to a realization that standardization of prices in their business is an absolute necessity. "Let contract work go much the same as it is, but fix a standard price on all job work, and on the materials sold," was the gist of one plumber's remarks this week.

A man comes into several plumbers' shops and asks for an estimate on installing one sink, a 30-gallon tank and bathroom complete. He will undoubtedly receive a variety of answers. While one plumber considers the job worth \$150, another may ask \$175 for exactly the same work. As a rule there is not a great deal of difference in the cost of installing a sink, 30-gallon tank and bathroom. One house may require ten or fifteen feet of stack pipe and lead pipe more than another but in all probability the next job of the kind that plumber is called to do will require less than the average amount of pipe. So that if a standard price of \$175 were placed on such an installation whereas on some jobs a man might not do very much more than break even on the next he would easily make up the difference. In every other trade or profession the public has come to regard prices as standard. No one would think of going into a grocery store to buy any staple article without having money to cover the price plainly marked on that article. People have come to regard such prices as standard, and do not stop to ask "Is that the best price you can quote me on that article?" Then why should not the same thing be true in the plumbing craft? To fix a standard price it is not at all necessary to raise prices so that by uniting together every plumber in the land is going to make increased gains. A fair price to the customer and the plumber alike may easily be struck without that. Moreover, such a system would tend to do away with all beating down and cutting of prices and would to a very great extent help to decrease the number of failures amongst sanitary

and heating engineers which have been so prevalent during the past few years.



### Plenty of Work Ahead

A statement recently made to Plumber and Steamfitter shows in concise form the conditions of trade amongst sanitary and heating engineers in Toronto. Early in 1912 a local by-law was passed condemning all outside closets except such ones in which water was used. Of these the total number amounted to somewhere over 13,000, situated chiefly in the outlying districts of the city and in many cases on streets where there were no sewage connections. In many cases orders have been in the hands of sanitary engineers for some months and in spite of all the city authorities can do it has been almost impossible to get these orders filled. Plumbers have had such a record season that their time has been taken up altogether with other work and in many cases job work has been allowed to lie over. Up to the present time only between three and four thousand of these outside closets have been changed and water closets installed in their places. Health officers are continually moving through these districts and examining conditions. Under present circumstances they cannot act in a very dictatorial manner for plumbers cannot be got to work on a job just whenever they are wanted. But an effort is being put forth to remedy matters where conditions are least sanitary, and in some cases it is necessary to adopt stringent means to enforce the law. On streets where there is no connection with the city sewage system, extreme cases are remedied by the installation of septic tank systems.

All this means work for the sanitary engineer. As conditions now stand there are still some nine or ten thousand outside closets condemned by the Health Department. This alone will help to fill in all the spare time of most sanitary engineers for some little time to come. Trade during the past year has been very brisk and there is every indication to show that next year will also be one of great activity.

# Getting Good Results From the Tinshop

Records Should be Kept of All Time and Material—The Forms Used by Orillia Hardware Co.—Disputes and Losses Have Been Minimized—A Description of the Tinshop and the Equipment Provided.

(Written for Plumber and Steamfitter by A. Latimer, with the Orillia Hardware Company.)

Keeping record of the working hours of men employed in the tinsmithing department and the amount of time occupied on various jobs has been a source of trouble to a large number of men in charge of this class of work. On occasions where a dispute has occurred between customer and dealer after the work has been completed, regarding the amount of time involved, it has been found a very difficult matter to reach an amicable agreement unless records can be produced to show exactly the amount of labor and material that has been used. Disputes are bound to occur at certain times and unless a customer can be shown by records that he is mistaken he is liable to have an unfriendly feeling toward the dealer. To prevent errors, we have introduced the use of a time sheet that is used in a number of large shops in the United States. An illustration of same is shown in this paper and it can be seen that the time sheet is divided into the quarter hour system. We find this to be the most simple and satisfactory time sheet that we have ever used, and we very seldom have trouble of any kind.

In using this time sheet the full time of all the men is accounted for, and the exact time spent on each job can be looked up on a moment's notice.

The time sheets are sent in every night and show the name of employe, whether workman or helper, and date of job.

The exact time spent on each job is shown on the sheet and a space is reserved at the bottom to show the amount of material used and any other notes that the workman may wish to make.

When a man is starting on a job, he enters in the time space, the name of the party that is having the work done, and when the work is completed it is also shown on the time sheet, in the space representing the time that the workman finished the job.

The time sheets of all the men are kept on separate files until the end of the week when the time is figured up and charges are made.

## Time Sheets Filed Away.

We make it a point to file away all our time sheets and in the event of a dispute we can look up the time sheets on a moment's notice. A large number of people do not care to sign a contract and we make three copies of all con-

tracts. One is given to the customer, one to the foreman, and the third is kept in the office. In doing this it does not leave much ground for dispute and we very seldom have trouble of any kind.

## Special Price Book Kept.

A special price book is kept for use in the store which contains prices on smoke pipe, eavetrough, and furnace pipe repairs, and is found valuable, as any of our salesmen in the store can attend to the wants of many customers that require goods in this line.

We keep our tin stock in closed buildings all the year round, and we have no trouble with damaged goods on account of exposure to weather conditions.

In our plumbing and steamfitting department we employ nine men and use the same time sheets as in our tinsmithing department. Our method of keeping a record of supplies and material in this department varies from the other, in the fact that we have a stock room and a special stockkeeper who devotes his whole time to this work.

## Complete Record of Goods.

All fittings and pipe are kept in the stock-room and all goods taken out are charged by the stock-keeper to the job on which they are to be used. The name of the workman is also taken. Goods that are returned are credited by the stock-keeper and in this manner a complete record is kept of all the goods used in this department.

We are fortunate in having a large work shop on the ground floor, with a high ceiling and well supplied with light. A work shop located on the ground floor is very convenient and much time and extra labor is saved, which would be lost providing the men had to go to an up-stair workroom.

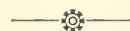
The machines we have in use at the present time are for 36-in. stock, but we are having them changed in order to handle 48-in. stock for the coming season. All the iron we have booked for next season will measure 48 in. by 120 in., and we think that a great saving can be effected both in time and material. On the plan of our workshop, will be noticed a revolving table or work bench and we think that it would be found very useful if introduced into every shop that is without one.

This table is octagon in shape, and is fitted with eight useful hand machines;

namely, wiring machine, two burring machines, two turners, circular shears, double seamer and setting down machine. This table has been found very useful, for instance, in making sap pails. As many as four men may be working on this table, and the work may be passed from the hands of one workman to the other. In this way a great amount of time and extra labor may be saved.

Attention has also been paid to the conditions of the shop in which our men have to work. We have a very high ceiling and the shop is well supplied with light.

We have windows on all sides of the building and the shop is well heated for work in the winter. We find that a much greater amount of work will be done by the men when working in a shop where they are comfortable and not crowded. We do a large amount of special work for one of our large factories, and can always use our full staff of men at all seasons of the year.



## BUILDING HELD UP.

Montreal, Que.—Plumbing and building all over this city is being held up and a serious condition is resulting owing to Sanitary City Inspector Dore having ordered that no more Scottish pipes can be installed for house plumbing.

Last summer the scarcity of pipe was very great and local manufacturers were unable to keep up with the demand. To get on with their work many plumbers gave large orders to Scottish manufacturers. Since that time Mr. Dore has been investigating matters and finds that the Scottish pipes do not conform to by-laws. Not only are they not molded in one piece and have screws inserted in them which might produce trouble later, but their weight is not stamped upon them, as specified in the city's regulations.

Great indignation is being felt by all plumbers through having their work held up in this way and some have even taken the matter up before the council.

Mr. Dore states that whether building is held up or not the Scottish pipes should not be laid as they are not as good from a sanitary standpoint as those made in Montreal. Besides they do not conform to local by-laws.



# Improvement in the Ventilation of Sewers

An Interesting Article on Conditions in Winnipeg—Experiments Which Have Been Made With a View to Overcoming the Evil.

THE question of sewer ventilation says the "Plumbers Trade Journal," has been a burning one and an obnoxious one in more senses than one in Winnipeg, Canada, for many years. The city is very flat and the drainage all discharges into the Red and Assiniboine Rivers. Although the sewers are carefully graded so that they contain no deposit and are self-cleansing, the odors arising from them are very objectionable. This is particularly so in the fall and winter months when the comparative warmth of the sewer air, which is at times 80 degrees above the temperature of the outside air, stimulates the ventilation of the sewer to such an extent that the velocity of the air up through the manholes often reaches 10 feet per second. When the warm moist air from the sewer strikes the cold air above ground, the suspended moisture instantly condenses and gives the ascending sewer air the appearance of steam.

In the spring and summer months, the temperature of the air in the sewers is lower than the outside air, which tends to make ventilation sluggish, so that very little annoyance is caused by offensive odors from the open manholes.

A considerable amount of flushing is done both by tanks built at the ends of branch sewers and also by hose flushing, and during 1912 over 42,000,000 gallons of water were used for this purpose.

There are about 600 flush tanks with an average capacity of 261 gallons each placed at the ends of branch sewers. These are flushed daily and in addition there is at least one gang and sometimes two who flush the lines with 2½-inch fire hose, sewers not having flush tanks.

In 1908, experiments were commenced to ascertain the best method of ventilating the sewers by other means than that of open manholes. Two different types were installed, one the Webb lamp and another designed by the City Engineer of Winnipeg and known as the city sewer ventilator. Both types are gas lamps so constructed that the sewer air passes over or through the flame. The results under favorable conditions are fairly satisfactory but in the case of the Webb lamp, which has a standard of about ten feet exposed above the ground with a top like an ordinary street gas lamp, the vent pipe frequently closed up with congealed moisture in very cold weather. The main objection to both these lamps was their cost of operation, which runs from 34 to 45 cents per day.

Since August of 1909 experiments have continuously been made of another lamp known as a deodorizing machine, and over a year ago a number of these machines were installed in manholes throughout the city and after a severe test of three months in the coldest season of the year (November, December and January), they proved very satisfactory, and since that time fifty machines have been purchased and installed by the city.

The machine is a new invention, the result of over two year's experimenting, and is most ingenious. It consists of a reservoir containing wood alcohol, the fumes of which impinge on a platinized disc about an inch and a half in diameter the alcohol fumes produces formalin in sufficient quantities to deodorize the sewer air before it emerges from the manhole. It works equally well in cold or warm weather. In the three months' test referred to, the machines were placed in the manholes which emitted the most objectionable odors, some of them on the trunk sewer coming from the district in which the abbatoirs are situated, and at no time during the test was there a distinct odor of sewer air at the manholes in which the machines were placed. Daily observations were made and anemometer readings taken. The results showed a distinct saving in operating expenses.

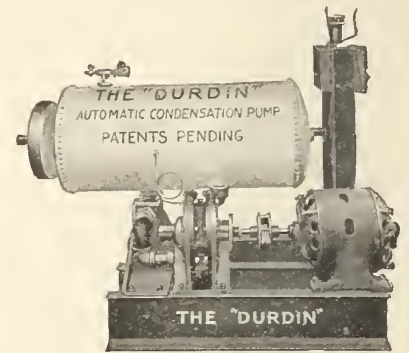
The cost of maintenance per day is based on the amount of alcohol consumed during three months, and on the assumption that the machines will require to be examined and attended to twice a week. The average cost per day works out at between 11 and 12 cents. The International Sanitary Co., of Winnipeg, have acquired the patent rights of this new machine and are now manufacturing and marketing them with success.

## NEW CONDENSATION PUMP.

The Chicago Pump Co., of Chicago, Ill., have placed before the trade a new condensation pump of which an illustration is here given. This pumping outfit is placed at the lowest point of the steam heating system, that is below the lowest radiator. One part of the outfit is a tilting tank receiver into which the condensation water and air flow by gravity. The receiver is balanced on specially designed brass trunnions. When a certain quantity of water has entered into it the weight of the water causes it to tilt; the tilting of the tank operates

the automatic switch and the electric motor is started; the motor in turn operates the turbine pump which pumps the hot condensation water into the boiler, causing a reduced pressure in the tank and also allowing it to tilt back to its proper position for another operation.

By relieving all condensation, water and air this pump makes it possible to heat the system with very low pressure



as the steam can circulate freely owing to the absence of water and air in the radiators. Another advantage is that instead of wasting the hot condensation water into the sewer, the pump pumps it back into the boiler. In this way many heat units are saved.

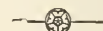
The outfit is claimed not only to save a considerable amount of coal but also to render the heating system more efficient.



## HOLD A CHRISTMAS TREE.

Toronto, Ont.—The next meeting of the local body of the Ontario Society of Domestic Sanitary and Heating Engineers will be held in the Albert Williams Assembly Parlors (up-stairs), 179 Yonge street, on Thursday, Dec. 19, at 6.30 p.m. The Sanitary and Heating Engineers Band, led by E. Lewis Legrow, musical director, will be in attendance. One of the main features of the evening will be a Christmas tree and a real Santa Claus who will endeavor to remember by some gift or another everyone present. A whole barrel of fun is promised to everyone attending.

The society is growing rapidly, several new members having been enrolled only recently. This fact alone will make the next meeting a most enjoyable one.



Edmonton, Alta.—G. F. Haswell has recently opened up a plumbing shop here.



# Tips for Helpers---By "Phoenix"

( Chapter II.)

## The "Little-Big" Foreman.

It isn't all "tees" and "ells," lug-ging radiators or toting pipes, the life of a journeyman steamfitter or plumber. There are many other things with which to contend, such as how you can stack up with the foreman, for instance. Now a foreman who can so manage the men as to get a maximum amount of work with a minimum amount of trouble is all to the good, generally. In 99 cases out of 100 you will seldom have any difficulty with a man of this class, if you are a fairly good mechanic, and are wise as to how to conduct yourself.

But the foreman who, every time something happens, has to go to headquarters and raise Ned, that is the kind of a man to steer clear of. He is a little big man who has not the nerve to settle matters on the spot, and the chances are that unless he has an interest in the business or some sort of "pull" he will not last so very long on the job.

Nevertheless, while he is on deck he can make matters very unpleasant for all concerned. He can not only worry the very life out of the men, but he makes existence intolerable for the owner by dilating on the petty happenings of each day. Such a man deserves all he gets and generally before he leaves some journeyman gives him all that is his due.

I do not believe in going around with a "chip on one's shoulder." That's looking for trouble, and it will come dead sure. Equally, I do not believe in being imposed upon by some rattle-headed foreman who is a squealer or who takes pleasure in rubbing things in on all opportunities. An experienced journeyman can generally tell the first day or two just what kind of a man the foreman is. Whether or not he has good sense, is balanced and decent. You can generally tell, for sure, if you listen a bit to the way he talks to the men who have been employed in the shop for some time. A first-class master will seldom keep a bully or squealer for a foreman, if he knows it, but they do not always know.

I remember very well one time when I went to work for a certain master plumber. The shop was a fine one, and was strictly up to date as the one shown in the picture. It had a fine exhibit of fixtures and the shop at the rear was about all that could be asked for in the

way of light, room, tools, stock, sanitary conditions and all that goes to make the life of a journeyman worth living. I certainly thought that I had struck it right when I went down to begin work on a certain Monday morning.

But I had not reckoned on the foreman. When I got into the shop and found four other journeymen who were just starting that same Monday morning I did think it rather queer, but put it down to a rush of work rather than anything else.

Pretty soon the foreman showed up and first things he does is to give one of the old hands one of the worst "dressings" that I ever listened to. Seemed as if there was nothing too bad for him to call that man. I hunched one of the helpers and asked if that line of talk was the regular thing and he said it was. It didn't take me long to figure out about how long my job would last there.



When I got a chance I asked the journeyman who was "called" where the trouble was, and he said that the foreman always laid all mistakes made on the men's shoulders. I had that foreman's number right then and knew just the medicine that he was going to get.

He sent me to look over a plumbing job that was giving very poor satisfaction, and told me to find out what was the matter and to fix it if I could. I think that he did not want any more new men anyway and that he was laying for me, for it would be poor policy to put a new man on a job of that kind until you knew what kind of a workman he was.

At any rate I took some tools and went to the job. Before long I saw that it would be necessary to have a helper for half a day and so went back to the shop to arrange for one.

I found the foreman there and told

my story, and he at once flew into a passion and began cursing me at a mile a minute rate. Grabbing up a piece of pipe I walked within hitting distance and told that brute just what he was. Then I got to thinking and went directly to the office and repeated it all over again for the benefit of the master plumber. Then walked out.

The next morning I met one of the men and he told me that the master wanted to see me and when I went in he said that he had fired the foreman and offered me the job.

Now, this is perhaps an extreme case and then perhaps it is not. It depends on how extensive your experience has been. It never pays to take abuse. The moment you submit, just that moment you become a mere worm whom no one will respect and upon whom every one will impose at every chance. Stand up for your rights on all occasions, but be sure that you know just what those rights are before you begin to "start something." When started carry it through to the finish.

If you are working on a job where you are compelled to sacrifice your self-respect and manhood, get out and find another job for there are plenty of masters who desire real men and not spineless creatures who dare not stand up for what is right.

## BANQUET AT CALGARY.

Calgary, Alta.—Two hundred and fifty of the Local Union of the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters' Helpers of the United States and Canada, attended the annual banquet of the organization recently held in the Al. Azhar Temple. The most striking feature of the evening was an address by James Marr. Responding to the toast to the Calgary Association of Sanitary and Heating Engineers, Mr. Marr pointed out that the plumber was now required to be more than a mere tradesman. He must be a specialist in sanitation. This has really become a profession and those who wish to follow it must educate themselves properly to meet its higher demands. He urged all the young men present to take advantage of the technical classes which the city had inaugurated that they might be in a better position to help themselves.





# The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.



## RADIATORS FILL WITH WATER.

Editor Plumber and Steamfitter.—On a certain steam job some of the radiators fill with water. The main seems to have the proper fall, and I enclose a drawing as to how it is run. Please advise.

E. Falling.

In the drawing the figures (in Figure 1), "1, 2, 3, 4, and 5" show the layout as it now is. Change to the way shown

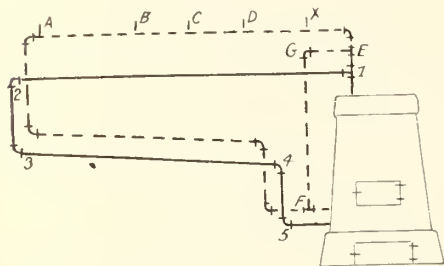


Fig. 1.

by the dotted line and marked from "A to F." Notice the relief, "G, E, F." This might drop from point "X" instead of being connected at "E."—D. C. H.

## WHAT KIND OF A STACK FOR CHEMICALS TO EMPTY INTO?

Editor Plumber and Steamfitter.—In a certain building several stories high there will be some printing offices on some of the upper floors. Also I believe there are to be some patent medicine factories on some of the other floors. Now, would it be the right thing to run iron stacks in this building, where the run from the drains on these floors comes into the stack? I wish that you would give me some hints on the subject. Can tile stacks be used in a building six stories high? If so, how are they run?

K. G. K.

In the case you mention, we do not believe that it would be the proper thing to run iron pipe of any kind for a stack. We are informed that, in some of the large cities, stacks of tile are used at least to the extent of eight stories high. No allowance for expansion was made. The tile was run story by story and when in was enclosed in a box which surrounded the tile (run in a corner

whenever possible) at a distance allowing for cement to be poured in, thus making a solid job of the whole thing. We have not found any place, yet, where such an installation has broken down. Of course, you understand that the tile was glazed and not the ordinary kind of tile that might be laid in a field.

We know that certain authorities object to the use of tile in almost any job and are not backing this tile stack as being perfect, but merely mentioning that it has been used on certain large jobs and seems to meet the needs of the occasion in a way that iron pipe in certain similar instances has failed to do, where the chemicals had a chance to get at the iron.—D. C. H.

## LOOP VENTILATION.

Editor Plumber and Steamfitter.—Will you please show in the paper what they call the "loop system" of ventilation?

J. R. G.

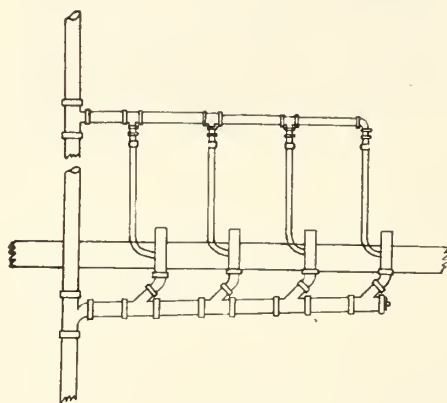


Fig. 2.

As requested, we publish a drawing, shown in Fig. 2, which we believe shows plainly the layout without comment on our part.—D. C. H.

## CONCRETE EXPANSION.

Editor Plumber and Steamfitter.—Can you give me any figures on the expansion of concrete? Or does it never expand? I have looked in vain for any information on the subject, and no one

whom I asked is able to give any figures on the subject, so any information will be gladly received.

A. Plumber.

We have not so very much information, ourselves, but such as it is you are welcome to. We believe that it is generally figured by some engineers that concrete will expand about one-tenth of one per cent. In a certain instance that we know of an engineer went and measured a certain piece of concrete road that was especially well constructed and he found that, in summer weather, there was an expansion of one quarter of an inch in sixteen feet. This expansion was enough to cause the road to crack and bulge in certain places, and to prevent other roads from so doing, the roads were laid in blocks about eight feet square, all edges of which were prepared for expansion by using rubber.—D. C. H.

## IRON OR TILE PIPE UNDER BOILER ROOM?

Editor Plumber and Steamfitter.—In the sketch I send you (Fig. 3.) I would like to ask whether the drain under the boiler room should be iron or tile pipe?

Engineer.

Your local ordinance might throw some light on the subject if consulted. Not being familiar with it we can say that if there are to be chemicals run through the drain it should be of tile. Otherwise we believe that the purpose would be best served by using iron sewer pipe.—D. C. H.

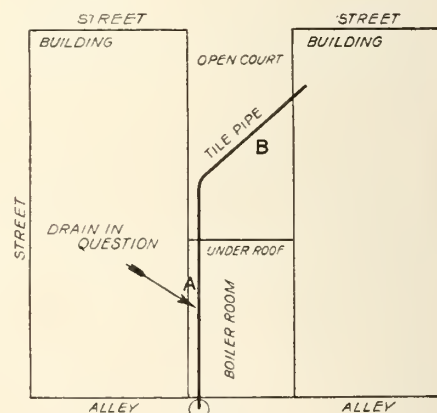


Fig. 3.

### SIMPLE CIRCULATING SYSTEM.

Editor Plumber and Steamfitter. — Will you be kind enough to show a drawing of a simple system of circulation for a hot water plumbing job in a small home?—R. R. Barnes.

In Fig. 4 we show (in general) the way that such a result can be obtained. The pipe "5—9" connecting the main line

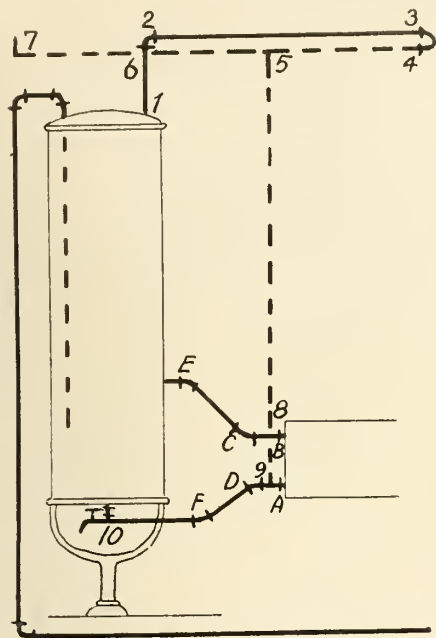


Fig. 4.

to the lower pipe which connects the range boiler and the water back would get the required result. Notice the 45 ells at "E, C," and "F, D" which makes an easier circuit. The draw off is at "10" and pipe to the fixtures at "7." This is a typical job, reduced.—D. C. H.

### CLOSET FLOORING.

Editor Plumber and Steamfitter. — Will a toilet room floor of cement be a good kind to have put down in a large factory where there will be a large amount of tramping on it every day?

Curious.

We have observed several factory toilets where cement had been used for the floor and must say that we were not favorably impressed with its showing. It cracked quite badly, and never seemed to be clean. We have noticed several toilets where the floor was of asphalt. While this did not crack, it was badly dented. The caretaker stated that he could keep the asphalt clean, but with all the work he laid out on it, the asphalt never seemed to look clean. We have also noticed toilet room floors which were made of tiles. These tiles not only did not crack (when properly laid) but were very easy to keep clean and always looked clean. The surface was smooth and no germs could possibly get into the

tiles. These are some of the conditions we have found and you can draw your own conclusions.—D. C. H.

## TINFOIL, ITS COMPOSITION.

Editor Plumber and Steamfitter.—Will you kindly let me know if tinfoil is made of pure block tin? Can it be made into wiping solder?—St. Stephen, N.B. J. F.

Tinfoil is supposed to be tin reduced to a thin leaf. We have not noticed any of the plumbers using it to make wiping solder and cannot recall any who have, although it may have been done. Tin-foil can be used for caulking leaks and makes the very best substance we know of for this purpose and being somewhat difficult to get hold of, we always found when we carried the tools that we could use all of it we could acquire, for this purpose.

AMOUNT OF COAL USED FOR  
HEATING.

Editor Plumber and Steamfitter.—Can you tell me how much coal it will take to heat 700 feet of radiation, the pipes all covered?—Maple Creek, Sask.  
J. B. B.

It would depend somewhat upon who ran the heating job and also as to how good a heating job it was. The manner in which the average amount of coal can be got at is to figure out the amount of grate surface in the boiler. It is stated that the grate will burn 12 pounds of hard or 20 pounds of soft coal per hour.—D. C. H.

### SIZE OF TANK vs. NUMBER OF PEOPLE.

Editor, Plumber and Steamfitter.—Can you tell me of any way in which one can tell about how much to allow for tank size as compared with the number of people that there are in the house or building?

C. T. Samson.

This depends, of course, somewhat upon the general local conditions and no sure rule can here be stated which will cover them all. Speaking generally, however, we may say that for most homes it has been found that an allowance of about five gallons tank space for each person will be sufficient. If estimating for a large building or some hotel it will be found that some four gallons space is enough.—D. C. H.

### DIFFERENCE IN GALLON MEASURE.

Editor Plumber and Steamfitter. — What is the difference between the United States gallon and the English

gallon? Does the weight of water change any according to the temperature?

S. C. T.

The English gallon contains 277.274 cubic inches while the United States gallon has only 231 cubic inches. The temperature of the water causes some difference in its weight. At 32 degrees a cubic foot of water weighs 62.418; at 39 degrees a cubic foot of water weighs 62.425; at 62 degrees (the general standard) it weighs 62.355; at 212 degrees it weighs 59.64 pounds. We have given the temperatures most quoted. If you wish other temperatures and weights write again.—D. C. H.

## DEODORIZERS IN TOILET ROOMS.

Editor Plumber and Steamfitter.—Can you tell me some good deodorizer that I can use in toilet rooms where the odor is anything but pleasant?—Query.

We should first investigate and see if there was not some way in which the odors IN the room could not be effectively taken OUT before we endeavored to disguise one smell with another. A first-class sanitarian ought to be able to figure the matter out for you so that there would be small need of any deodorizer at all. As we understand it there are some disinfectants which really accomplish the purpose and there are others which are mere smells. To get something which will kill the germs you should go to some first-class chemist and ask him to analyze any disinfectant that you may choose. Then you will know just where you are at on the matter. The chemist will be able to give you definite data and you will then know just what results to expect.—D. C. H.

HOUSE SEWER ENTERING MAIN  
SEWER.

Editor Plumber and Steamfitter.—Is it proper that the house sewer should enter the main sewer through a regular “tee” which would make the water, etc., turn at right angles before it got into the regular current of the main sewer?  
1766.

Decidedly not. The house sewer current ought to enter the main sewer current at an oblique angle, so that it would be flowing in the same direction, generally, as the main sewer current. This would not interfere with the main current and can be accomplished by making use of a "Y" with an easy sweep instead of using the "T" of which you speak.

The right angle turn formed by the "T" interferes with the flow of the main sewer current, and also would tend to produce a deposit of matter more or less solid at that point.—D. C. H.



# Complete Course in Sheet Metal Work

By L. W. KOSER

Plate 22 shows different methods of getting an ellipse. How to develop the pattern for elliptical shaped articles, also oblong articles with regular flaring sides and rounded corners.

In examples No. 1, the ellipse is formed by drawing two circles and connecting their outer edges by arcs, the radius of which is equal to the distance from intersection of the circles to the opposite edge of the circle.

To explain, suppose we want to draw an ellipse as shown by example 1.

We first draw a straight line as A-B, the length of the desired ellipse. We then divide it off into three equal spaces and mark the two centre spaces C and D.

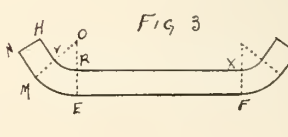
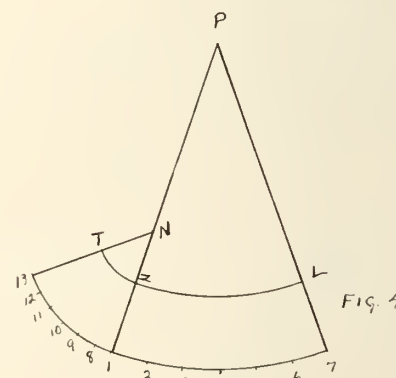
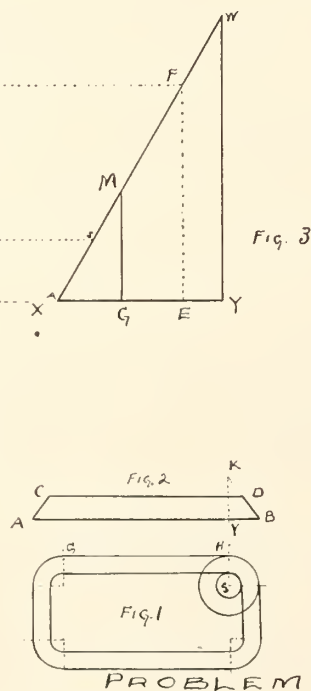
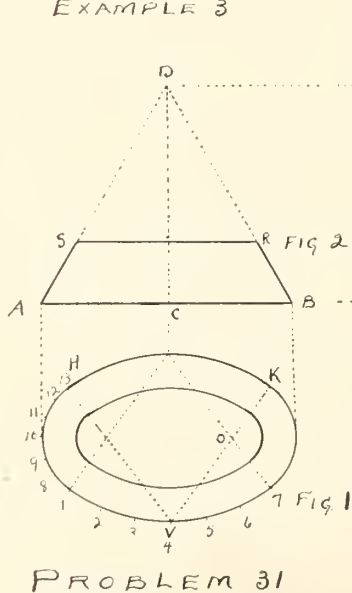
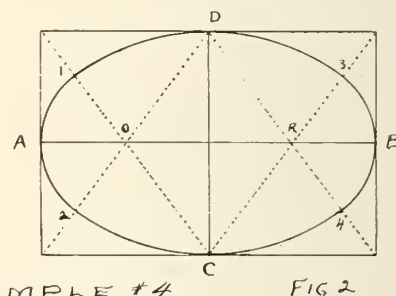
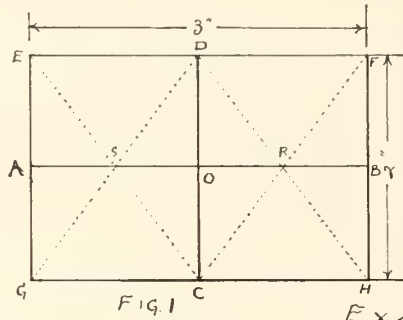
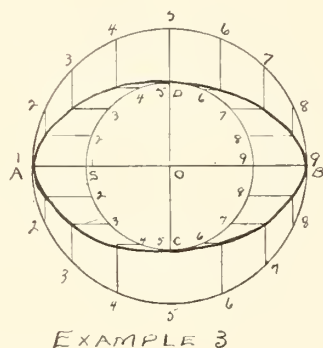
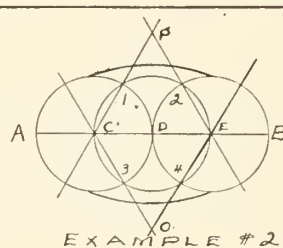
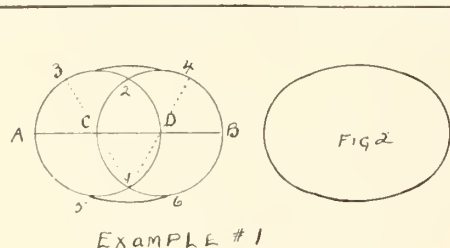
Then with C as a centre and A-C as radius, we describe the first circle, then with D as centre and the same radius we describe the second circle.

Where the circles intersect as at 1 and 2, we draw light lines through the points C and D, and on through to the outside edges as shown by 3 and 4.

Then with 1 as centre and 1-3 as radius we describe the arc 3-4. In like manner with 2 as centre and the same radius we describe the arc 5-6, thus completing the ellipse. The finished ellipse with the construction lines rubbed out is shown at Fig. 2.

Example No. 2 shows another method

of getting an ellipse by equal size circles. First draw the line A-B the desired length. Then divide it off into four equal spaces, and mark the centres as C-D-E. Then with C as centre and C-A radius we draw the first circle. Then with D as centre and the same radius we draw the end circle. We then draw lines from C and E where the circles join, through the points 1-2-3 and 4. These lines are extended on one side until they meet the outside edge of the circles and on the other side until they meet at the points O and P. Then P and O are the centres for drawing the large arcs to complete the ellipse.



# The Dangers of Public Drinking Cups

What Was Found When Glass Used for Nine Days in School Was Put Under a Microscope—Results of This Test Demonstrated Unsanitary Feature of Indiscriminate Drinking.

A DRINKING glass, used in a school for nine days, was put under a microscope, and here is what was found: "The human cells scraped from the lips of the drinkers were so numerous on the upper third of the glass that the head of a pin could not be placed anywhere without touching several of these bits of skin. The saliva, by running down on the inside of the glass, had carried the cells and bacteria to the bottom. By counting the cells present on fifty different areas on the glass, as seen under the microscope, it was estimated that the cup contained over 20,000 human cells or bits of dead skin. As many as 150 germs were seen clinging to a single cell, and very few cells showed less than 10 germs. Between the cells were thousands of germs, left there by the smears of saliva deposited by the drinkers. Not less than one hundred thousand bacteria were present on every square inch of the glass."

A nice, clean glass, this! And yet in almost every school-house to-day are similar glasses or cups out of which children drink during the day.

Bacteriologists have for many years believed that a drinking cup which is used indiscriminately by a large number of persons is inevitably bound to contain bacteria in large quantities, in addition to bits of human skin deposited on the glass by contact with the lips. It remained, however, for one man to bring home to the nation the danger which he and others knew existed in thousands of pathogenic, micro-organisms, which attached themselves and grew in unclean, common water glasses and cups. This man, Prof. Alvin Davidson, of Lafayette College, Pennsylvania, subjected a number of glasses, which had been used from nine days to several months in public schools, to microscopical tests and found literally millions of decaying human cells and bacteria. These included the germs of tuberculosis, pneumonia, diphtheria, tonsillitis and other disease-producing organisms.

A cup which had been used for several months without washing, in a high school, was lined with a brownish deposit which, when viewed under the microscope, was seen to be composed largely of particles of mud, with thousands of bits of dead skin and millions of bacteria. When a small quantity of this sediment was in-

jected under the skin of a healthy guinea pig, the animal died in forty-eight hours—the post-mortem examination showing that death was due to blood poisoning. A second guinea pig, under similar circumstances, developed tuberculosis; and inquiry proved that several of the pupils in the high school were afflicted with the dread malady.

The rim of another drinking cup, used in a school, bore no fewer than 5,000,000 germs, while a vastly greater number lingered deeper in the vessel, where saliva had dripped down. "Where else in the daily activities of life," asked Professor Davidson, "could such a rich field of infection be found? I believe that nine out of every ten public cups bear some kind of disease-producing bacteria."

Dr. M. A. Barber, of the University of Kansas, was employed by the Board of Health of that state to make bacteriological tests of drinking glasses and cups in the public schools, at railroad stations, on trains, and in other public places. He carried about with him small sterilized swabs, which he applied to the rims of the receptacles, afterwards examining the swabs for microbes. He found the swab to be invariably infected to a considerable extent, and in most instances with such objectionable microbes as those of pneumonia and blood poisoning.

The conclusions drawn from all observations are to the effect that the common drinking vessel is one of the most fruitful sources of the spread of infectious diseases. Such mouth to mouth infections, furthermore, are especially dangerous, because of the moist state in which the germ cultures pass from person to person.

The state of Kansas was the first to prohibit common cups. In March, 1909, the Board of Health, at the request of its secretary, Dr. S. J. Crumbine, passed resolutions that no public or private school and no railroad corporation should furnish any drinking cups for public use. It was suggested that sanitary fountains be installed wherever there is a wholesome water supply, and that in country schools water tanks fitted with faucets and individual cups be provided. The resolutions of the board have the binding force of law and have been generally observed, not only by the public authorities, but also by the railroads.

Death lurks in it. Microbes multiply about its rim. Tuberculosis, diphtheria and other deadly diseases are distributed by it.

Other state health authorities have not been slow in accepting the results of the observations which were brought to them, and at the present writing, Kansas, Louisiana, Michigan, Mississippi, Massachusetts, Delaware, New Jersey, Wisconsin, Oklahoma and Illinois have taken summary action.

## Marking of Plumbers' Work.

With the object of promoting excellence in plumbers' work, the general council of the National Registration of Plumbers have approved a system of marking plumbers' work which has been introduced by the Worshipful Company of Plumbers. The marking is done by means of a copper label which has embossed on it, on the right-hand side in the space at the top, the mark of the employers (an alphabetical letter or other sign) to distinguish each of their jobs whereon the system of marking is adopted. The number of each of the registered operative plumbers who execute the work appears in the space on the left side of the label. The words "Registered plumbers' work," appears below these marks. The scheme has been adopted by the general council on the recommendation of a committee that, "in order that the public may have greater security for the efficiency of the sanitary appliances and water services in their houses, the work connected with such appliances and services may be so marked by registered plumbers that the names of the master plumbers or other employers and also of the operative plumbers employed to execute the work may be identified and recorded, and a check may thus be placed on the employment of unqualified or irresponsible persons to execute plumbers' work.

## A Sweeping Order.

Those who have been waging war on the common drinking cup have won another and a decisive battle, for early in November, Secretary of the United States Treasury, MacVeagh, with one sweep, abolished the public drinking cup from railroad cars, vessels and other conveyances operated in interstate traffic, and from depots and waiting rooms of common carriers.

(Continued on page 19.)



# Public Must Learn Meaning of Sanitation

HERE is an instance, says "Domestic Engineering," that is typical of many. A property owner had an old dwelling remodeled so as to convert it into two flats, or apartments, as they were actually advertised. In order to make the flats easily rentable, he painted and papered them and installed electric lights. Then he put them on the market, and had little difficulty in renting them.

A woman with a family, which was her chief interest in life, took the upper flat, equipped with the bathroom which had been used in the dwelling originally. She looked carefully at the paper and the paint and the electric light, and gave the bath-room only a casual glance, just to make sure that it was there.

After she had signed the lease, however, she became aware that the plumbing was not in good condition. She soon learned, by the simple process of living in the same house with it, that it was actually a menace to the health of her family. She called the attention of the owner to the condition, yet had a great deal of difficulty in getting the situation relieved, and even when action was finally taken in was in the form of repairs which could be regarded only as makeshifts, and which were not and could not be permanent in their effects.

What was the cause of this condition? Was it the fault of the property-owner? Assuredly not; he was a good business man, and he knew that the people who rented houses were going to look hardest at the paper and the paint and the lighting, and were going to give the bathroom and other plumbing scant, if any attention; and he was wise enough to spend most of his money on purely surface improvements.

Was the good woman who rented the flat for her little flock to blame? Hardly, for she had never heard much on the subject of plumbing, and knew little about it. In fact, if she had been asked to pass an opinion upon the efficiency of the fixtures in the building, she would have been unable to give an intelligent answer. They were old, but appeared to be passably good; and only use and experience could tell whether or not they were efficient.

Well, then, who, if anybody, was to blame because the improvements in the building were of the kind that "would make a show" and only of that kind.

A fair answer would be, "The plumbers of the community, who had permitted the house-owners and house-renters of the town to go uninformed as to not merely the desirability, but the necessity of good plumbing."

That may sound like an extreme position, yet it is thoroughly tenable.

If a man eats tainted meat and becomes sick, does the public blame him for not knowing more than to eat bad meat? No, for he did not have the proper equipment of experience or information to pass on the meat. Was the dealer who sold it to him to blame? To some extent; yet not wholly so, for he was operating under the supervision of the city authorities. These were responsible, chiefly, for it was their business to inspect the meat sold by the dealer, and to examine his methods and products so closely as to make it impossible for him to sell contaminated goods to the public.

When a man goes to buy an automobile, he does not look merely at the finish of the car nor examine the upholstery; but he lifts the hood and looks over the engine, and gets at the wheel and drives the automobile, listening for every sound from the motor, so that he can determine if the most essential part of the car is up to grade. The reason why a man who is buying or renting a house does not give the same attention to the plumbing that he has given to other features of the building is because he has not been taught that the system of drainage is the most vital single feature connected with the dwelling.

It would not be fair to say that the public, as a whole, is densely ignorant on the subject; for the experience of plumbers in scores of cities who are selling better and better goods all the time, demonstrates that there is a stronger demand for quality than there has ever been. Incidentally, the manufacturers of plumbing fixtures should be given a lot of the credit, for they have created goods which are not only useful, but beautiful, and have brought about a metamorphosis whereby the bath-room, instead of being a place to be dodged, is the show-room of the house.

Wise home-builders, instead of beginning at the parlor and going back, as one aggressive plumber put it recently, are now beginning at the kitchen and moving the other way.

But while an improvement has been made, it is a gradual one, which is all the slower because it has not been aided to as large an extent as might have been by those who are most concerned with the extension of knowledge concerning the desirability of high-grade plumbing. It has moved along almost imperceptibly, when it might have been given a big, strong push that would have sent it far ahead of its present position.

A leading plumber in an Ohio Valley city has some pretty good ideas on the subject of increasing the consumption of plumbing goods, and bettering the grade of the fixtures and connections that are installed.

"The basis of the demand for good plumbing," said he, "is knowledge of what good plumbing means. When the public learns that it means beauty, utility, and health, and that poor plumbing means uncertain, unsatisfactory and dangerous conditions, then there will be no question about the sort of service the people will require. But at present, because a room can be painted and papered for a few dollars, it is thought out of the question to fit up a modern bathroom requiring an expenditure of \$250.

"It is our business to change this condition, and to bring about a thorough realization of what plumbing involves, and of the real economy of making a sufficiently large investment in this feature of home equipment. It is a proposition that affects everybody in the trade. Consequently everybody in the business, who is of the right character and possesses the right qualifications, should contribute to the expense of carrying on a campaign of education on the subject."

He continued, outlining his ideas on the subject by stating that he believed the local association of master plumbers should get together in an advertising or publicity fund, and that this should be spent in sending out literature to prospective builders, as well as in newspaper advertising.

"Every time a building permit is taken out," he said, "the owner and the architect ought to receive information bearing on good plumbing, pointing out the necessity of spending a little less for builders' hardware, if necessary, instead of slighting the plumbing. They ought to be given literature which would aid them in determining the best goods

for the special purposes they have in view.

"The daily newspaper reader ought to be given little practical talks on the subject all along, so that when he rents a house, or prepares to build, he will have his mind made up to buy good plumbing, and to have a drainage system that he can rely upon. The investment value of quality work of this kind could be pointed out, and the attention of the public drawn to the idea that this feature of the equipment of a house should be examined more closely than any other before buying or renting.

"In a word, my belief is that by co-operative work along this line by the plumbers' association, a definite and measurable improvement in the conditions under which we are working can be developed. The association is the logical medium through which to handle the undertaking, since in order to be effective, it must be disinterested, and not boost the individual interests of any one firm. But everybody in the association would benefit, because the names of members would be appended.

"Constant pegging away along this line would mean also that membership in the association would have greater value than it otherwise could have. It would teach the public to look for membership in the organization as a guarantee of quality service, and as in other cases would make the association of greater value to every member.

"If we know that a lawyer is not a member of his bar association, or that for some reason or other the medical organizations do not include on their lists a certain physician, we are likely to decide that there must be something wrong with those practitioners. There ought to be as much value in membership in the master plumbers' associations as in any other similar bodies, and we have an opportunity to develop it."

Co-operative publicity is one of the big movements of the day. It is being applied, chiefly for educational purposes, to many lines of endeavor. If the plumber quoted is right, it has a place in this field. And if he is correct in his conclusions, every local association has a chance to undertake something for the good of the public, the trade at large and its own members in particular.



### THE DANGER OF PUBLIC DRINKING CUPS.

(Continued from page 17.)

This sweeping order against "any drinking cup, glass or vessel for common use," effective immediately, is in the interest of the nation's health, and was the direct result of an investigation of

the United States Public Health Service—a branch of the Treasury Department—which holds the drinking cup to be a menace as a carrier of disease. A drinking cup, it is said, may contain thousands of bacteria from disease infected persons.

Mr. MacVeagh's action constituted an amendment to the interstate quarantine regulations. Sherman Allen, Assistant Secretary of the Treasury, stirred by the revelations of the Public Health Service, and the fact that twenty-six States already have laws forbidding the use of the common drinking cup, recommended the move to Mr. MacVeagh and was sustained by the solicitor of the Treasury Department as to the secretary's legal power to make the order.

The common drinking cup has been abolished to a large extent in Canada too; though the work has been carried along more quietly. Many trains now lack the tin cup or tumbler which used to find its accustomed place under the water reservoir. A number of fountains too have been altered, jutting water, which enables a drink to be taken in sanitary manner, taking the place of the old means of drinking from the common metal cup. But still there is much to do here.

It might be borne clearly in mind that there is a need of general substitution as well as of removal. Means of getting a drink on board train is needed. Possibly a law requiring the carrying companies to supply individual paper drinking cups would be wise. Even a slot machine, where a paper cup could be secured for a cent would be a good measure. Finding no cup on board a train, and no possible means of getting a drink, one is inclined to feel animosity toward those who have fought so hard and long for the cause of sanitation.



### TAPPING INTO A RANGE BOILER.

Editor Plumber and Steamfitter.—I am sure that it would be a good thing if you could tell us just how to put a tapping into a range boiler so that it would work all right. I know that many times it is desirable to tap the range boiler, but not once in ten times is it ever a good job.—C. T. Samson.

There are two methods of doing this job. The first is to punch in a hole that has been drilled in the boiler at the desired point. Then when the hole has been punched, insert a tap and make the thread. Such a job is not the most secure and is always almost sure to be insecure and to leak. The other way is to make the hole larger than the nipple and so that a lock nut can be used in the inside of the boiler. You can file slits on

the sides of the hole so that the lock nut can be slipped through. When the nipple has been screwed through the lock nut on the inside of the boiler, a rubber gasket, washer and another lock nut can be used on the outside of the range boiler and the job made tight. In this way you will have a job that will not leak and one that will be solid.—D. C. H.



### CROOKED THREADS.

Editor Plumber and Steamfitter.—Is it a good plan to use what are called "drunk" or crooked threads on branches and risers where it is desired to get a proper fall?—Apprentice.

It has been the custom in the past to use crooked threads where the occasion demanded, but we believe that better results would be obtained to use pitched ells and cut the threads straight.—D. C. H.



### REINFORCING MATERIALS.

A small booklet recently received from the Berger Mfg. Co., of Canton, Ohio, illustrates and describes very thoroughly three different types of reinforcing materials, namely, rib-truss, ferro-lithic and multiplex reinforcing and furring plates. A descriptive synopsis of the products briefly describes each and cuts show the materials fastened in place on the purlins and partially concreted. In addition to describing these products much valuable information on reinforcing materials is given.

General information concerning centering and full particulars on roofing, concreting, waterproofing, flooring, stucco finish, maximum spans and every conceivable purpose for a reinforcing and furring plate make the booklet a most valuable one.



### ANNUAL AT HOME.

The Annual At Home of the Ontario Society of Domestic Sanitary and Heating Engineers will be held on the Forrester's Hall on College Street on January 31. At the last meeting of the society, a committee of five, with power to look after the program for the evening, get out invitations and tickets and look after matters in general.

The following sanitary and heating engineers were appointed to act on the committee: T. B. Smythe, A. E. Melhuish, N. Blumbergh, J. L. Bloomer, and Mr. Gentle of Gentle and Travis. An excellent evening's entertainment is looked forward to by all.



**PLUMBING MARKETS.**

Toronto, Dec. 14.—Judging from reports received during the past week the plumbers situation has not been greatly relieved as yet. No one is complaining about a scarcity of work. On the other hand most plumbers have more work on their hands than they can easily manage and some have had to cancel orders on account of not having either the material, or the men to do the work. Everything points towards a record year for 1912.

Apartment houses and large buildings of one kind or another are keeping up the amount of contract work, and with the coming of colder weather job work amounts to a very considerable figure.

Boilers and Radiators. — Here the situation shows little sign of relief and steamfitters find themselves tied up as badly as ever. In order to bring immediate although only temporary relief one steamfitter is buying radiators from another whose contract does not call for heating for another month or so. In such cases advanced prices are very often being paid in order to secure the supplies necessary.

All classes of radiators seem to be very much the same now. Some manufacturers have practically stopped turning out fancy radiators and are directing all their energies to the manufacture of plainer styles which demand less work and can thus be rushed through faster.

Although prices on boilers have been recently advanced manufacturers are looking forward to further advances in the near future. Not only has the price of all iron increased greatly in the past few months but coke used in smelting has also advanced, and more than that is very hard to get. So that judging from present conditions, a further increase in furnaces is not only warranted but may be expected.

Soil Pipe.—An advance in soil pipe was made only yesterday. Medium and heavy pipe formerly quoted at 65 and 10 per cent. off is now moving out at 65 per cent. F.O.B. factory points only. Supplies have been rather better of late owing chiefly to an easing off in demand. Large quantities are still moving out however, and demand is wonderfully brisk for season.

Brass Fittings.—A decline has recently taken place in the price of brass fittings. Quick opening compression bath-cocks with index handles formerly quoted at 2.90 are now quoted at 10c lower. No change has been made in those with brass handles.

Iron Pipe and Fittings. — As stated last issue the tendency in all of these lines is towards an advance. Wrought iron pipe is expected to go up very soon

and several of the larger firms, anticipating this, are sending in large orders to take the advantage of present prices. "We have booked orders simply to save ourselves," was the statement made by one firm this week when speaking on the subject. The price and scarcity of coke together with advanced prices of raw material are given as the direct causes of all increases.

Lead Pipe.—Present prices in lead pipe are regarded as too high to admit of any further advance. Little change is reported in the situation this week.

Solder. — With the coming of cold weather which brings with it bursting of pipes, demand for solder will very greatly increase. At present the market is rather quiet. Prices remain firm at 26½ for cheapest grades of easy wiping. Better goods run as high as 30.

Metals.—The metal market remains unchanged except in the case of bar iron which by some firms has been advanced 5 cents.

**A GOOD EXAMPLE.**

At last one of Toronto's sanitary and heating engineers has dared to break away from the customs and traditions of the past. E. T. Needham has classified himself in the Toronto Telephone Directory and elsewhere as a sanitary and heating engineer, rather than as a plumber and steamfitter. For some time past many have been desirous of making such a change, but none have cared to take the lead. But now that Mr. Needham has broken the ice there will be no excuse for others not following his example.

**NEW BOOK ON HEATING AND VENTILATION.**

The education of the modern steamfitter has been accomplished very largely by the frequent publication of books and trades papers giving much practical information accompanied by drawings and data which may readily be understood. Alfred G. King, author of "Practical Heating Illustrated" and other treatises on scientific heating and ventilation, has recently published his latest work entitled "Practical Steam and Hot Water Heating and Ventilation." The book is a modern and thoroughly practical work on steam and hot water heating and ventilation with descriptions and data of all materials and appliances used in the construction of such apparatus together with rules, tables and much other very valuable information. In it are contained more than three hundred specially made illustrations showing in detail all of the various heating systems with pipe, ra-

diator and boiler connections. Altogether a very readable book is presented and much information valuable to the trade is contained in it.

**MANAGER APPOINTED.**

The H. W. Johns-Manville Co., of New York, announce the appointment of C. S. Berry as manager of their Atlanta, Ga., office, located at 31½ South Broad street. In order to facilitate delivery in the South a stock of roofings, packings, pipe coverings and other J.-M. asbestos, magnesia and electrical products is carried in the local warehouse situated in the same building as the office. A force of workmen experienced in the application of all J.-M. products is also employed.

**SIZE OF SEWER WHERE RAINFALL ENTERS.**

Editor Plumber and Steamfitter.—In a house where I am putting in the plumbing, the rain leader will have to flow into the house sewer. Now should the sewer be increased in size, or will the ordinary four inch sewer be large enough for the purpose?

Smith.

If your house sewer is properly laid we believe that the four inch sewer will care for the rain leader. By properly laid, we mean that it shall have sufficient fall, proper joints and as few curves as possible. See that the joints are made right whether the sewer be of tile or iron.—D. C. H.

**PLUMBING INSTALLATION IN NEW UNION STATION.**

(Continued from page 9.)

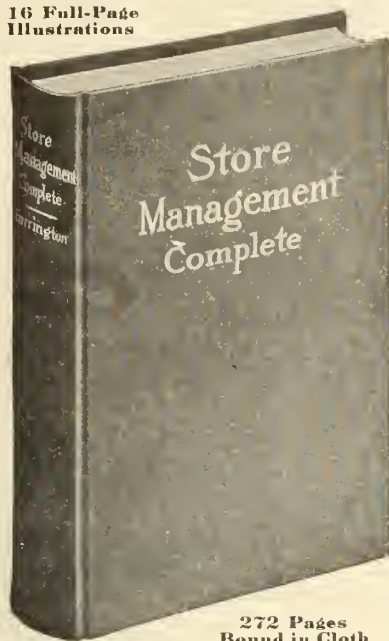
hot water just described. The canvas jacket on both hot and cold systems received two coats of lead and oil paint.

On the drinking water lines sectional cork covering is used, all joints being broken and the contact surfaces at all ends and longitudinal joints being coated with waterproof cement. The fittings are encased in cork jackets with similar cement on all joints, after which the entire covering received a final coat of asphalt paint. On all main lines the cork covering is 1½ in. thick and on branches under 6 ft. in length 1¼ in. is used.

The drinking water pumps are insulated with 2-in. thick cork blocks, applied in a similar manner to the covering on the drinking water piping and securely wired in place. Outside of this is applied a covering of 8-oz. canvas, sewed on and painted two coats of waterproof paint.

## Store Management—Complete

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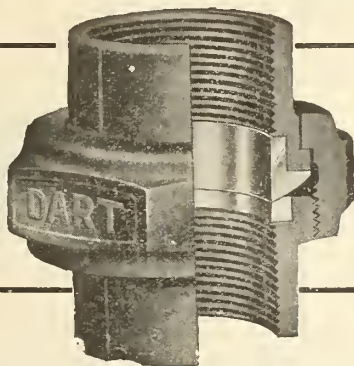
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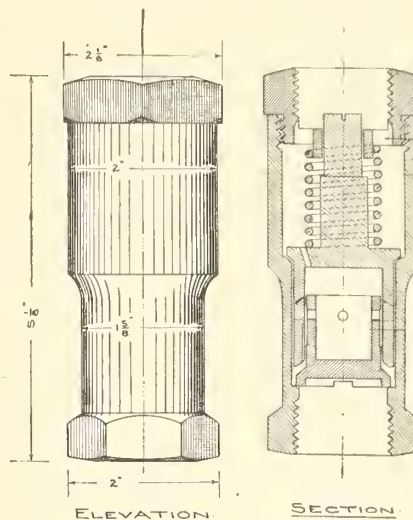
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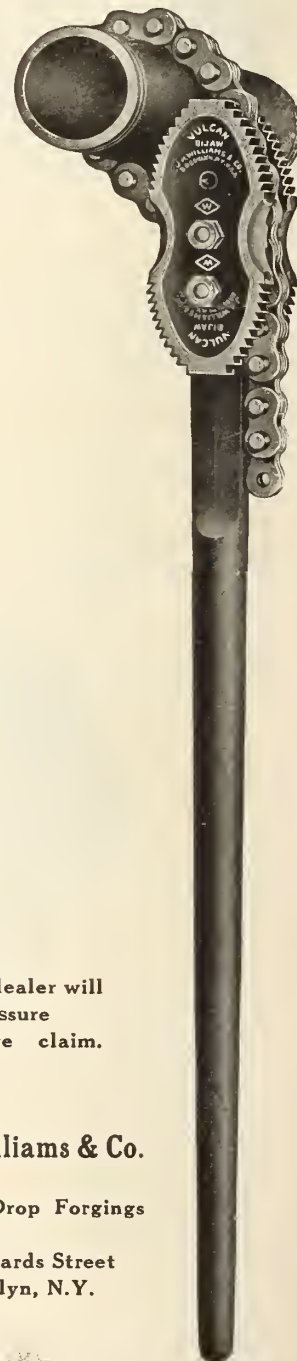
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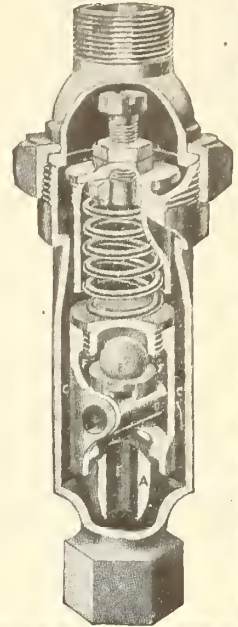
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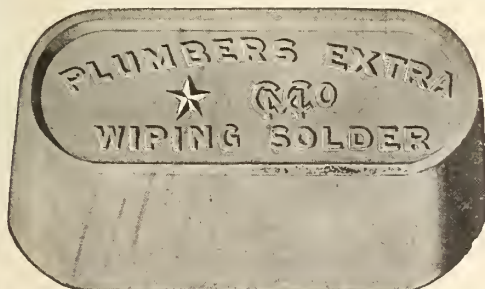
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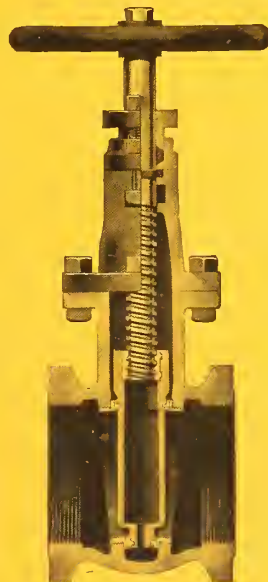


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